The PHOTOFACT Servicer

SET 411 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT 1, 1958

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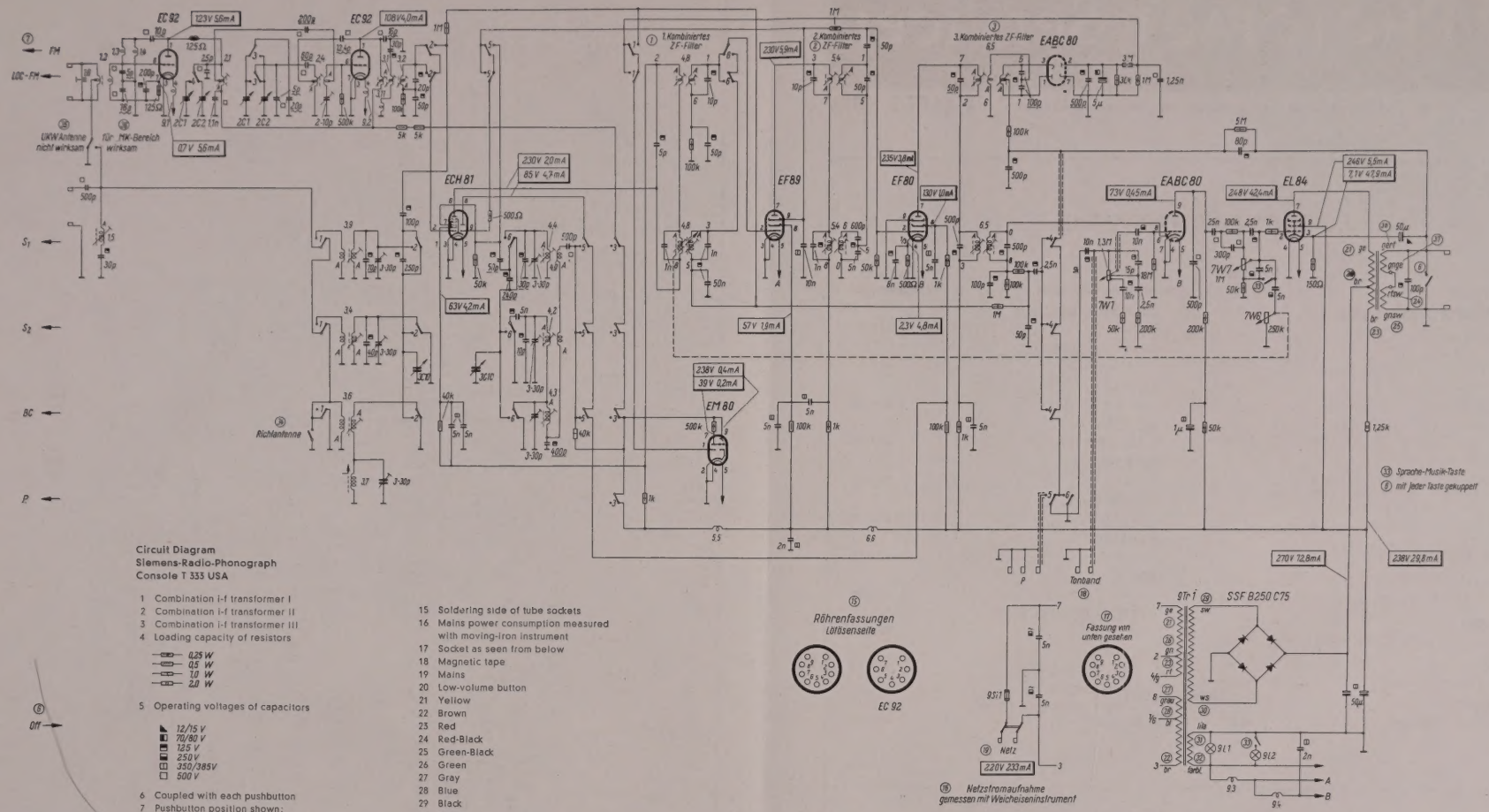
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.



Circuit Diagram
Siemens-Radio-Phonograph
Console T 333 USA

1 Combination i-f transformer I
2 Combination i-f transformer II
3 Combination i-f transformer III
4 Loading capacity of resistors

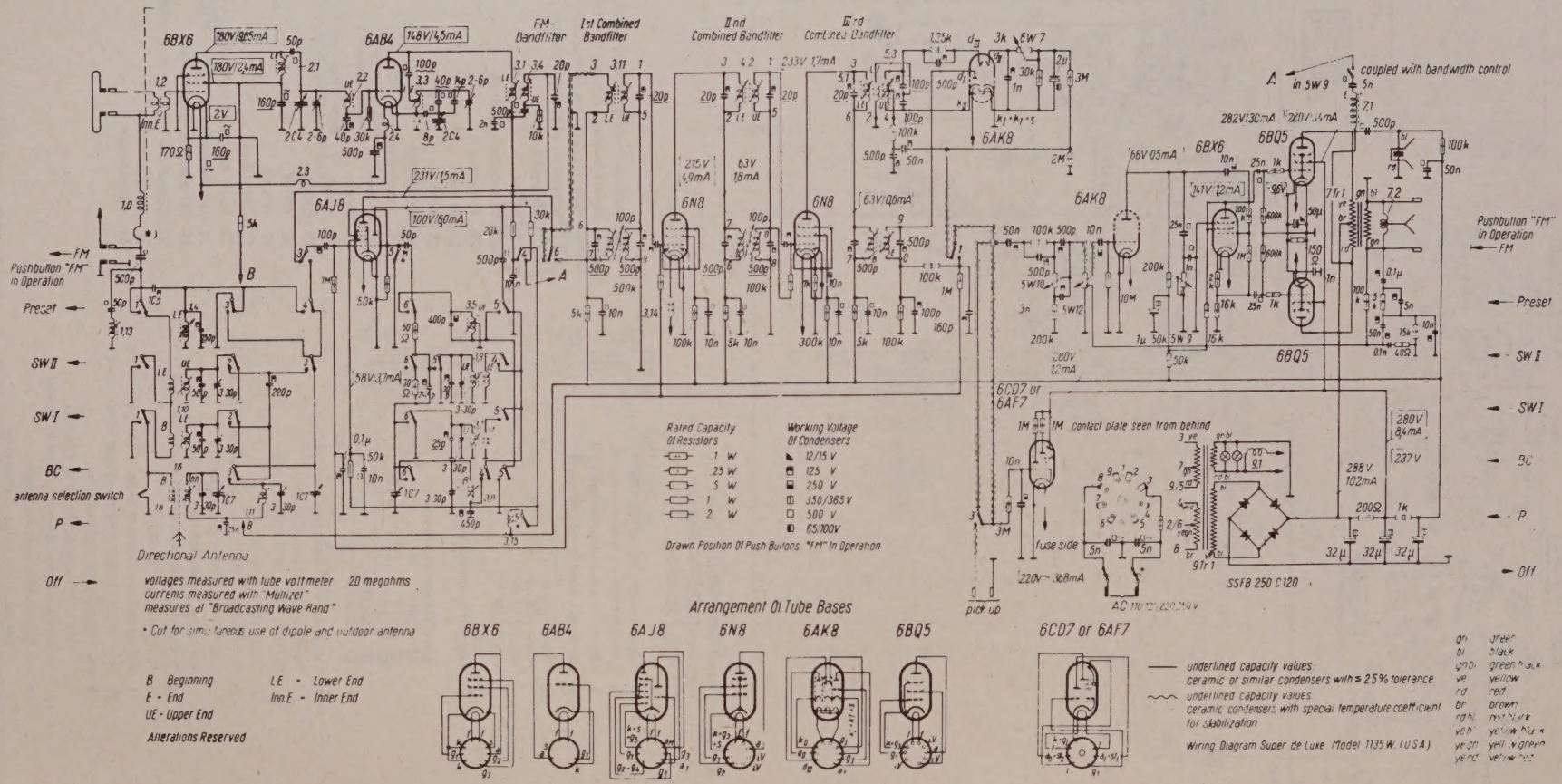
0,25 W
0,5 W
1,0 W
2,0 W

5 Operating voltages of capacitors

12/15 V
70/80 V
125 V
250 V
350/385 V
500 V

6 Coupled with each pushbutton
7 Pushbutton position shown: Buttons FM and 3L depressed
8 Subject to changes
9 Current and voltage readings with BC button depressed; FM voltages extra; variable capacitor half turned
10 Voltages measured with tube voltmeter R_i = approx. 20 MΩ
11 Currents measured with Multizet instrument
12 A = front (lower end of single-layer coils)
13 ~~ Capacitors underscored: ceramic capacitors with special temperature values for stabilization
14 — Capacitors underscored: ceramic or similar capacitors with ≤ 2.5% tolerance
15 Soldering side of tube sockets
16 Mains power consumption measured with moving-iron instrument
17 Socket as seen from below
18 Magnetic tape
19 Mains
20 Low-volume button
21 Yellow
22 Brown
23 Red
24 Red-Black
25 Green-Black
26 Green
27 Gray
28 Blue
29 Black
30 White
31 Mauve
32 Colorless
33 Tone spectrum controls
34 Wavemagnet
35 FM antenna inoperative
36 Operative for BC and shortwave bands
37 Green-Yellow
38 Yellow-Red

SCHEMATIC DIAGRAM COURTESY SEIMENS & HALSKE AKTIENGESELLSCHAFT



SEIMENS 1135W

SCHEMATIC DIAGRAM COURTESY SEIMENS & HALSKE AKTIENGESELLSCHAFT

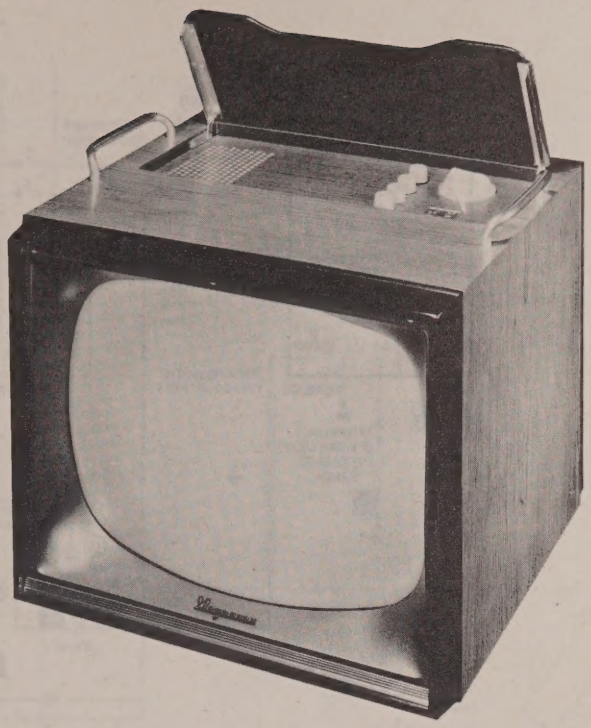
PHOTOFACT* Folder

with CIRCUITRACE*

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DISASSEMBLY INSTRUCTIONS



MAGNAVOX CHASSIS U27-01AA, -02AA, -03AA, -04AA, V27-01AA, -02AA, -03AA, -04AA (27 Series)

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the top.
2. Remove 6 wood screws from rear cover. Remove rear cover.
3. Remove the picture tube socket, HV lead, speaker leads, yoke plug and inter-chassis plugs.
4. Remove 4 bolts from bottom of horizontal chassis. Remove horizontal chassis.
5. Remove 2 nuts from bottom of vertical mounted chassis.
6. Remove 2 nuts from controls on top of vertical chassis. Remove vertical chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Magnavox	CHASSIS	U27-01AA, U27-02AA, U27-03AA, U27-04AA, V27-01AA, V27-02AA, V27-03AA, V27-04AA
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle		RATING 110 Watts, 1.14 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by rotating the Channel Selector 6 channels clockwise, making an adjustment and returning to the channel adjusted. Set the Fine Tuning at the center of its range. Remove the rear cover and supply power to the receiver. The adjustments are accessible thru a hole in the tuner rear cover. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws from the trim strip at the top edge of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

Focus can be varied by connecting white lead, pin #6 of picture tube to either pin #36 or #39 on the sweep and sound printed circuit board. Adjust beam alignment magnet for best focus and brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A 5Ω fusible resistor (R67) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

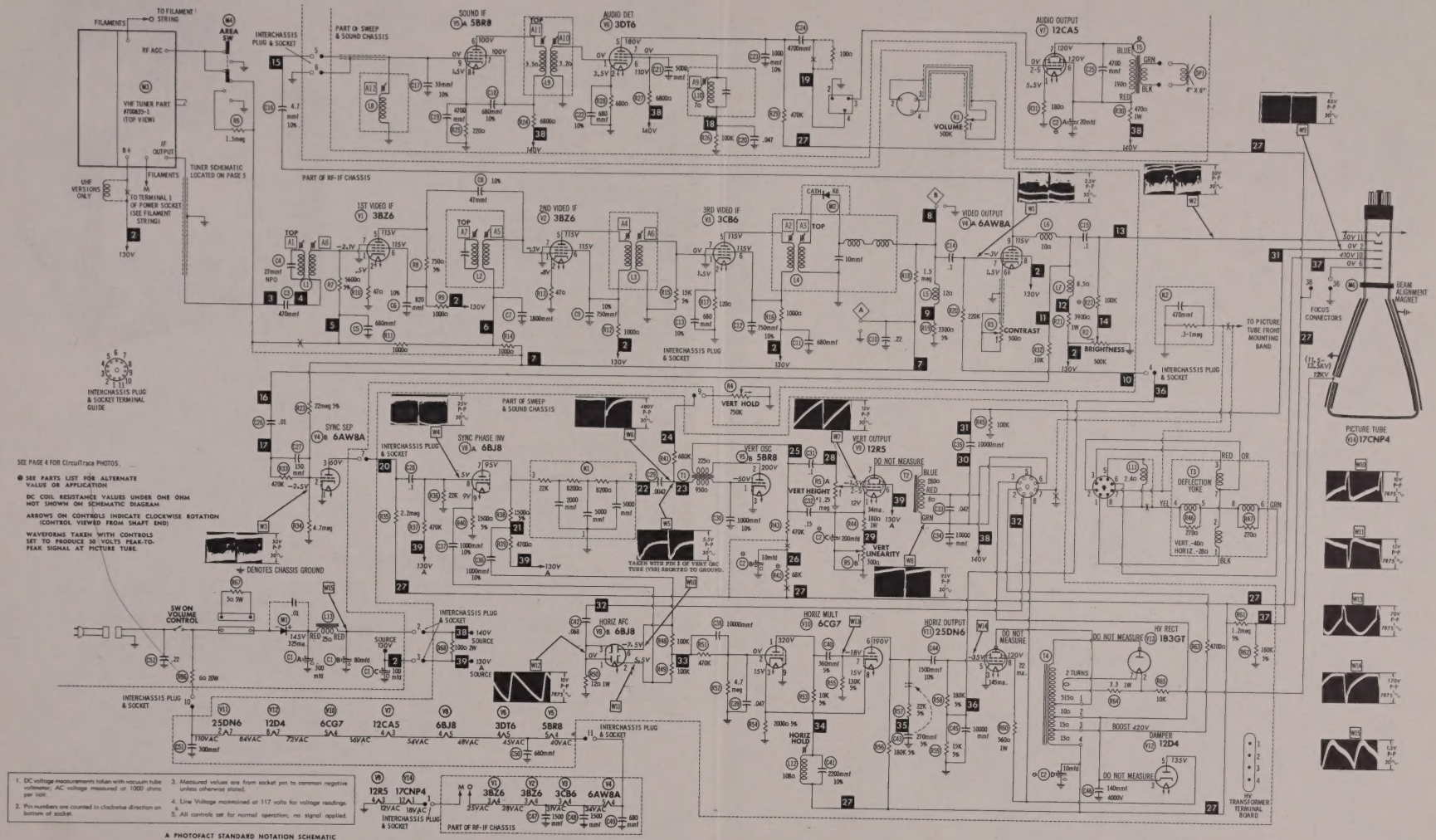
MAGNAVOX CHASSIS U27-01AA, -02AA, -03AA, -04AA, V27-01AA, -02AA, -03AA, -04AA (27 Series)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H605

SET 411 FOLDER 1


SEE PAGE 4 FOR CircuiTrace PHOTOS.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
DENOTES CHASSIS GROUND
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured on 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®
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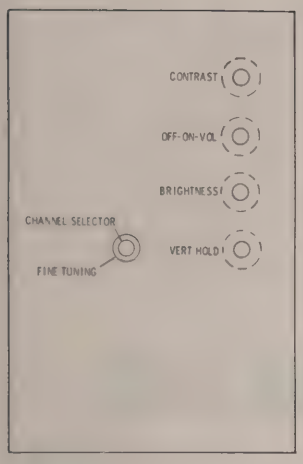
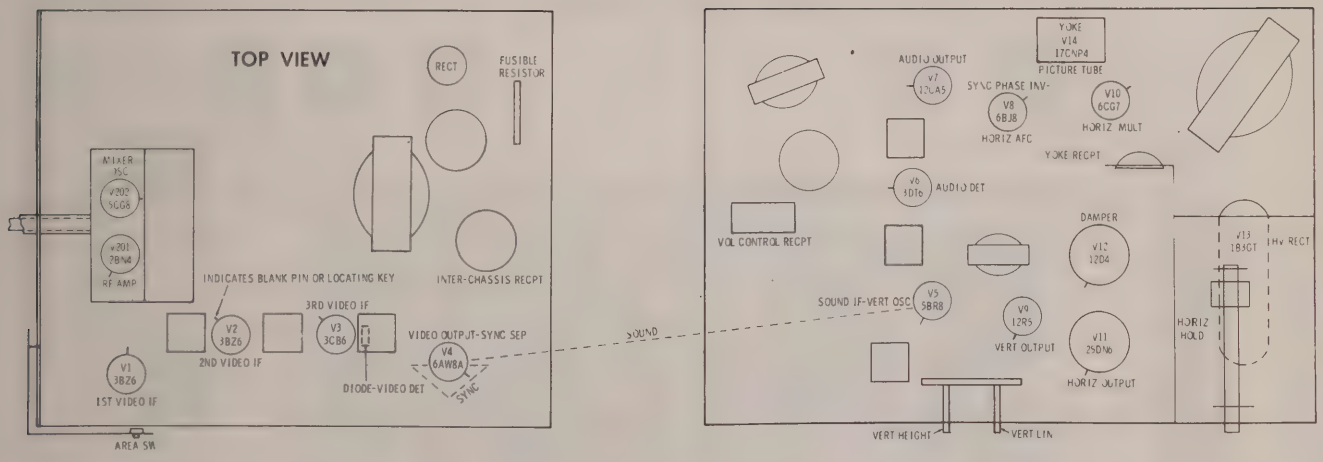
MAGNAVOX CHASSIS U27-01AA, -02AA, -03AA, -04AA, V27-01AA, -02AA, -03AA, -04AA (27 Series)





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

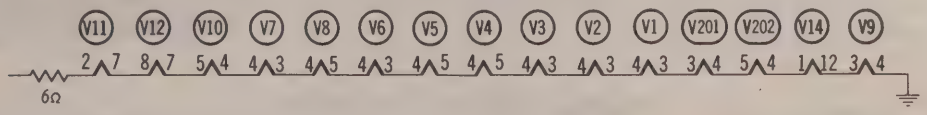
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (R67), Rectifier (M1)

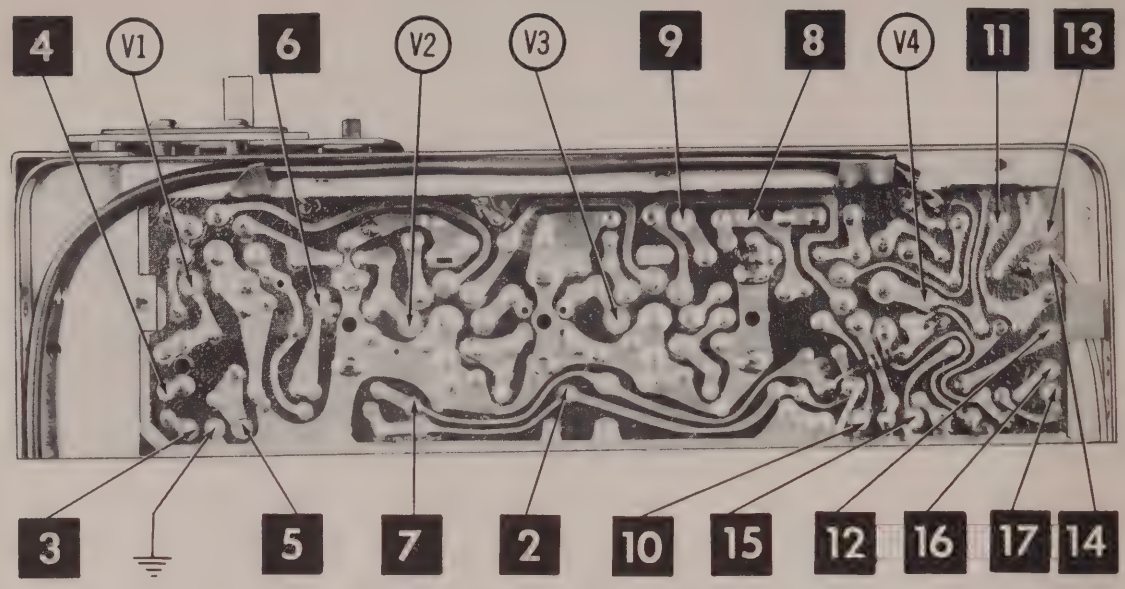
SWEEP FAILURE
No raster, has sound V8, V10, V11, V12, V13, V14
No vertical deflection V5, V9
Poor vert. linearity or foldover V5, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, M1
Vert. off freq. V5
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M2), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4, V8
No horiz. sync V4, V8
No vert. or horiz. sync V4, V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)

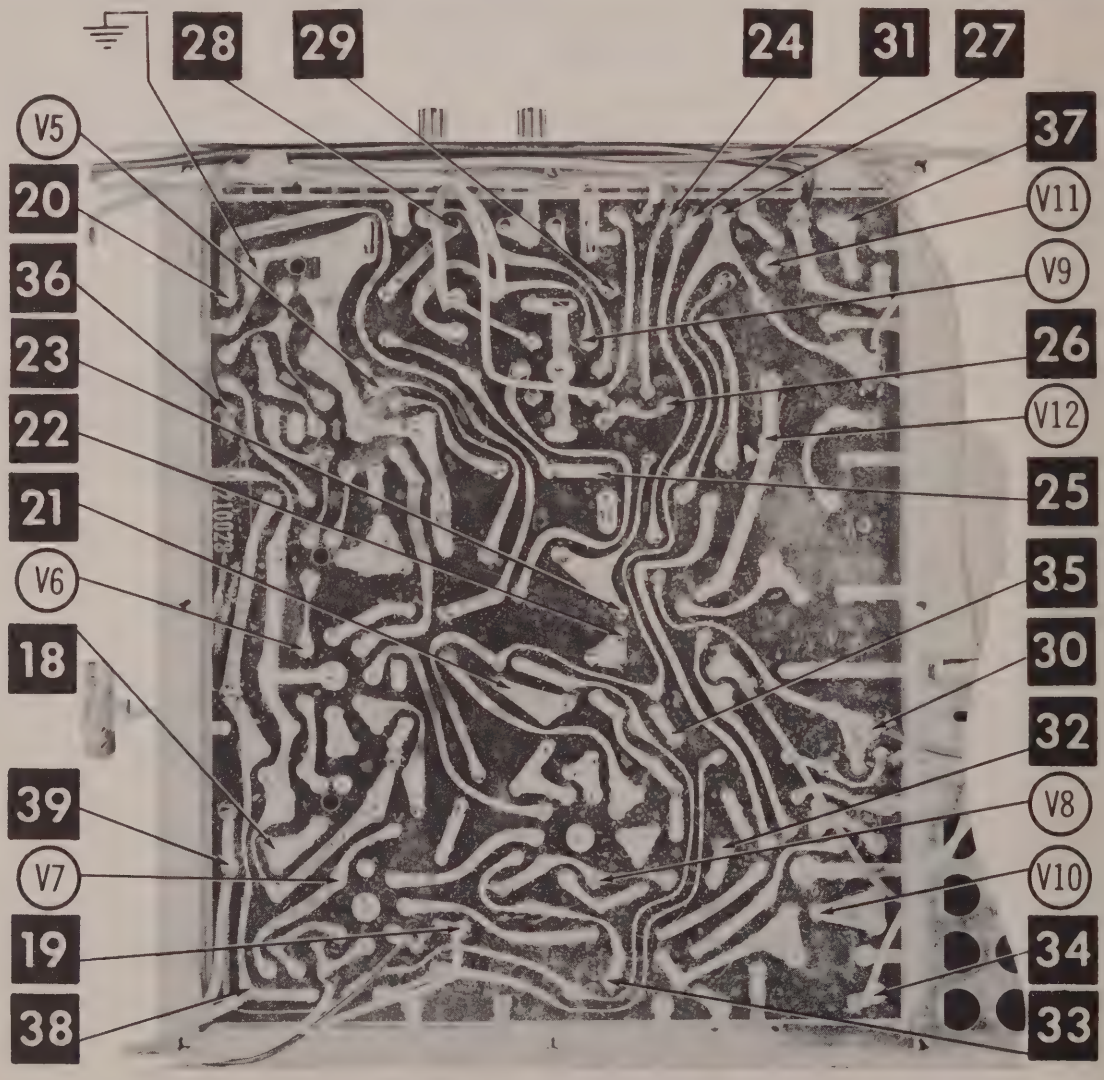




A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

VERTICAL CHASSIS
PRINTED BOARD

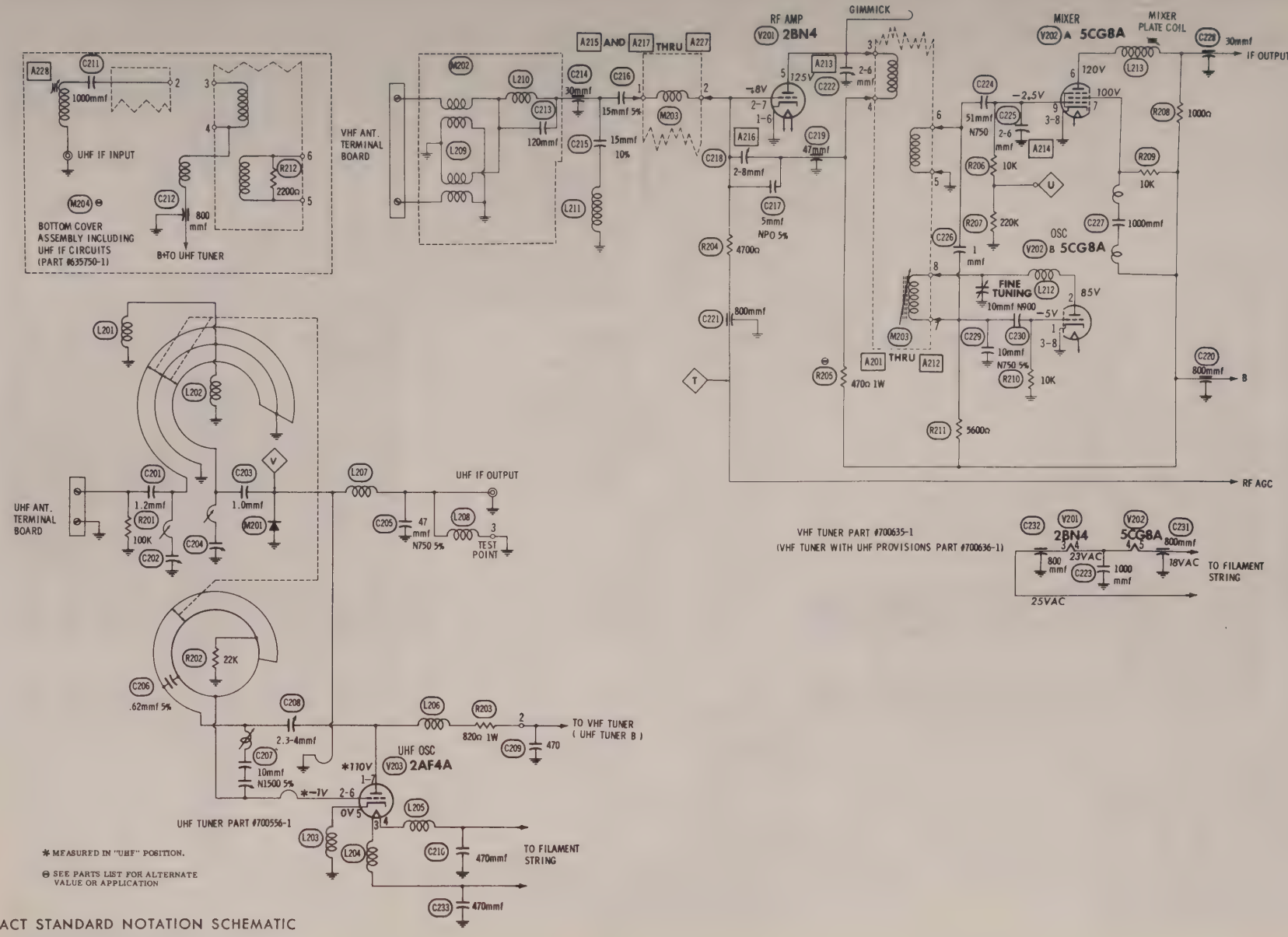
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

HORIZONTAL CHASSIS
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUNERS #700635-1, 700636-1, 700556-1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the negative lead of a 1.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Set Local-Distant switch to "Local" and contrast control fully counter clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Antenna coils (A215 and A217 thru A227) are adjusted thru a rectangular hole on the opposite side of the tuner from the oscillator slug adjustments.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Fig. 201	Across VHF antenna terminals thru matching network (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point U. Low side to chassis.	A213, A214, A215, A216	Connect a 22Ω ½ watt carbon resistor across the terminals of the channel 10 antenna coil (A215). Adjust A213 and A214 for a balanced response curve similar to Fig. 203. Remove 22Ω resistor from A215. Adjust A215 by expanding or compressing coil turns for maximum gain between markers with balanced peaks. If the valley is not centered between the two balanced peaks, remove the B plus to the tuner and adjust A216 with a non-metallic alignment tool until the valley is centered between peaks as in Fig. 204. Reconnect B plus to the tuner. Replace tuner shield on tuner.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A217	Adjust for maximum gain and symmetry similar to Fig. 203.
4.	"	"	207MC	205.25MC 209.75MC	12	"	A218	"
5.	"	"	201MC	199.25MC 203.75MC	11	"	A219	"
6.	"	"	189MC	187.25MC 191.75MC	9	"	A220	"
7.	"	"	183MC	181.25MC 185.75MC	8	"	A221	"
8.	"	"	177MC	175.25MC 179.75MC	7	"	A222	"
9.	"	"	85MC	83.25MC 87.75MC	6	"	A223	"
10.	"	"	79MC	77.25MC 81.75MC	5	"	A224	"
11.	"	"	69MC	67.25MC 71.75MC	4	"	A225	"
12.	"	"	63MC	61.25MC 65.75MC	3	"	A226	"
13.	"	"	57MC	55.25MC 59.75MC	2	"	A227	"

TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Connect bias as under "VHF Oscillator Alignment".
Set the Local-Distant switch to "Local" position and contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	1000Ω Carbon Resistor	High side to point (V). Low side to tuner chassis.	43.0MC (10MC Swp)	42.25MC 45.75MC	UHF	Vert. Amp. thru 10K across video detector load.	A228	Adjust for response curve similar to Fig. 205 with MINIMUM tilt.

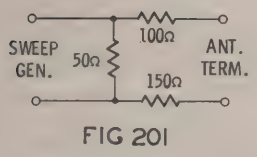


FIG 201

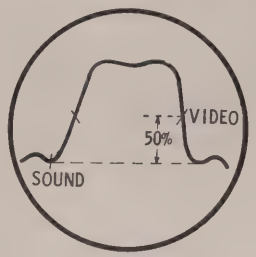


FIG. 202

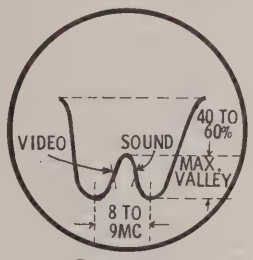


FIG. 203

FIG. 204

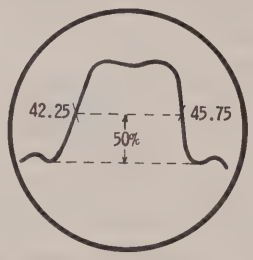
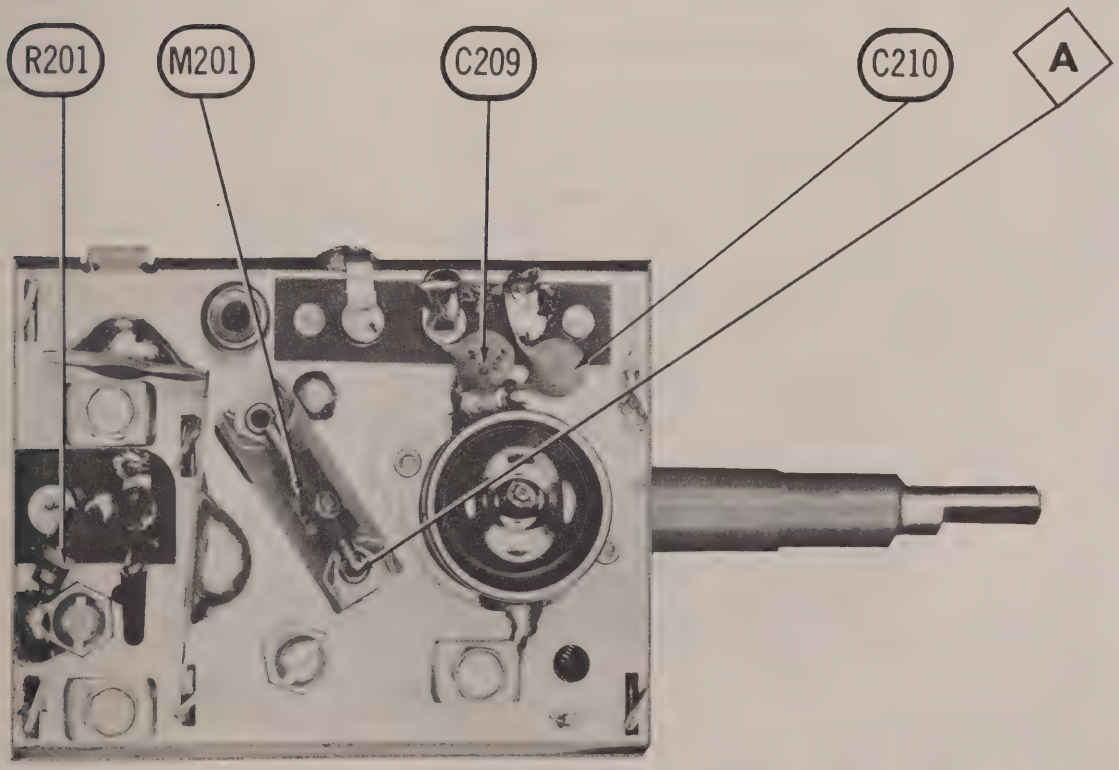


FIG. 205



UHF TUNER—TOP VIEW

SET 411 FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set the "Area" switch to the "Strong" position.
Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 3BZ6 (V1). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in center of trap notch. Two slug positions will accomplish this. Use the one with maximum core separation.
2.	"	"	"	42.25MC 45.0MC 45.75MC	"	"	A2, A3, A4, A5, A6	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A2 and A3 for maximum gain, A4 to place 45.75MC at 50% and A5 and A6 to place 42.25MC marker at 50% on other side.
3.	Direct	High side to ungrounded tube shiled floating over Mixer-Osc. Tube (V202). Low side to chassis.	"	41.25MC	"	"	A7	Adjust to place marker in center of trap notch. Two slug positions will accomplish this. Use the one with maximum core separation.
4.	"	"	"	42.25MC 45.0MC 45.75MC	"	"	Mixer Plate Coil, & A8	Adjust Mixer Plate Coil for maximum amplitude of response curve with 45.75MC marker at 50% as in Fig. 1. Adjust A28 for maximum gain and proper tilt. Repeat these adjustments until Fig. 1 is duplicated.

SOUND IF ALIGNMENT

Preset A9 fully counterclockwise.
Tune in a strong local TV signal and adjust A9 just past the point of maximum sound and MINIMUM distortion.
Reduce the signal input by removing the antenna or connecting an adjustable attenuator between the antenna lead and the antenna terminals, so that with the Volume Control at near maximum, the sound is barely audible. Tune the Fine Tuning thru undistorted sound. Set the Fine Tuning to the verge of distortion.
Adjust A10, A11 and A12 for MINIMUM distortion. After each adjustment, reset the Fine Tuning to the verge of distortion.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 8.

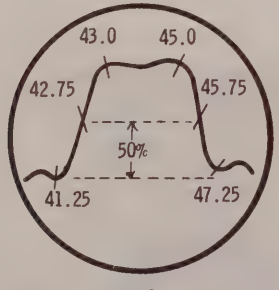
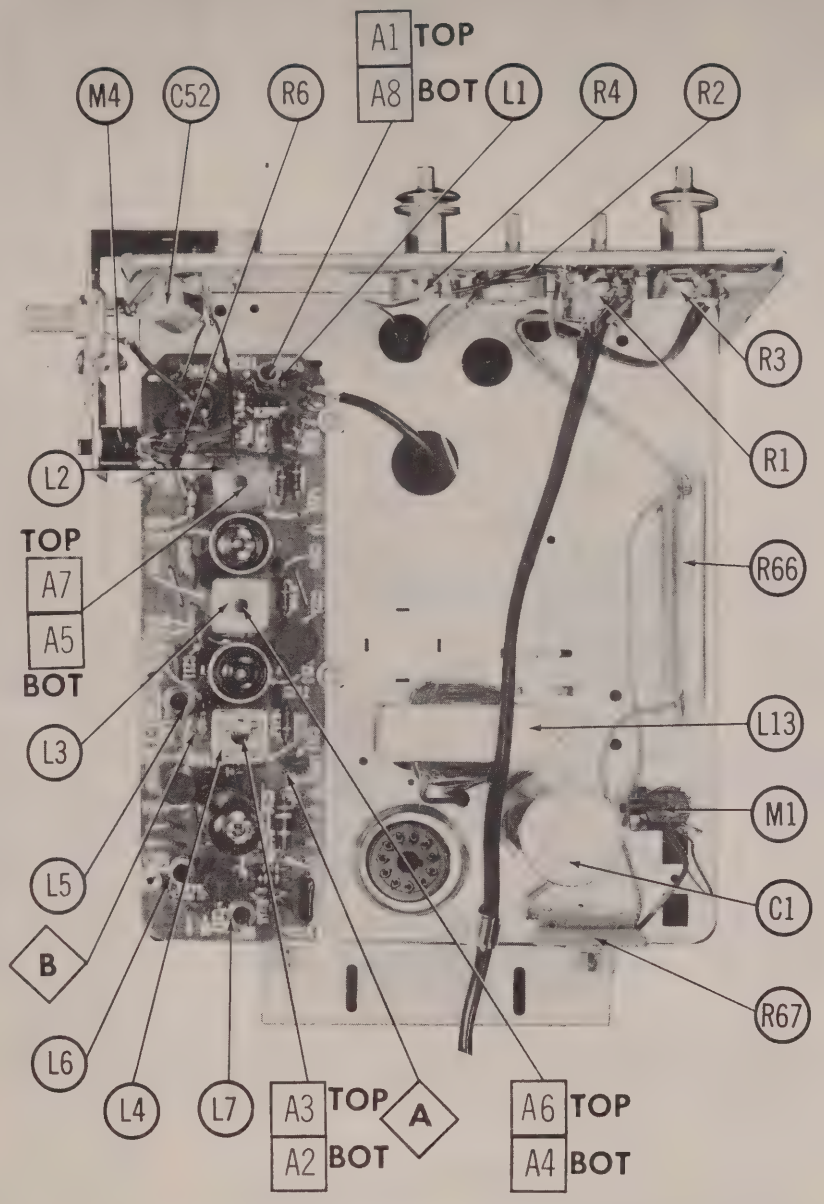
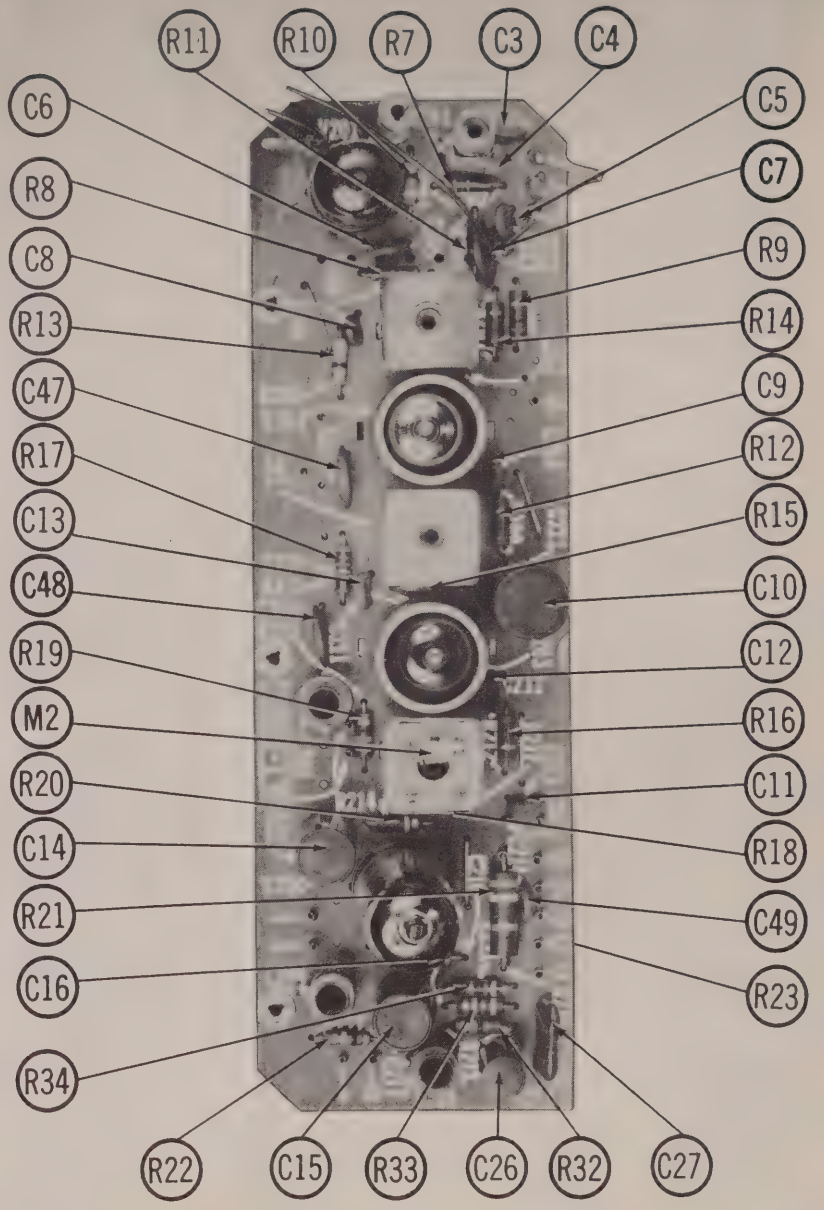


FIG.1



VERTICAL CHASSIS-TOP VIEW



VERTICAL CHASSIS PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp.	3BZ6	
V2	2nd Video IF Amp.	3BZ6	
V3	3rd Video IF Amp.	3CB6	
V4	Video Output-Sync Sep.	6AW8A	
V5	Sound IF Amp.-Vert. Osc	5BR8	
V6	Audio Det	3DT6	
V7	Audio Output	12CA5	
V8	Sync Phase Inv.- Horiz. AFC	6BJ8	
V9	Vert. Output	12B5	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	25DN6	
V12	Damper	12D4	
V13	HV Rect.	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	MAGNAVOX PART No	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No	
V14	17CNP4			17CNP4 ①	①"Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No	CORNELL-DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.
C1A	.300	150	270021-69	AFH3-13-60					R2558 *
B	.180	150							
C	.600	150							
C2A	.20	150	270021-77 ①	AFH4-120-90					R2697 *
B	.10	450							
C	200	50							
D	.10	475							

① Early productions used 10-10-30 ② 475-450-150 in this application (Part #270027-77).
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	470		350234-34	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C4	27				TCZ-27				NPO
C5	680		350234-38	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C6	820		350234-140			1R5T82		MS-382	10%
C7	1800		350234-45	DE-0018	DD-182	L10DA8	UC-5218	5GA-D18	
C8	47		350234-110	NPO-DI 47	DD-470	L10Q47		MS-447	10%
C9	750		350234-139			1R5T75		MS-375	10%
C10	.22	200	350240-13	P388N-22		BC2P22J	ACE6022	2BE-P22	
C11	680		350234-38	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C12	750		350234-139			1R5T75		MS-375	10%
C13	680		350234-138		D6-681	1R5T68		MS-368	10%
C14	.1	200	350240-13	P388N-1		BC2P1J	ACE401	2BE-P10	
C15	.1	200	350240-13	P388N-1		BC2P1J	ACE401	2BE-P10	
C16	4.7		350231-133	NPO-SI 4.7	TCZ-4R7	CTA8V47C	Z7-5547	97CCB-V47	10%
C17	33		350236-39	NPO-DI 33	DD-330	C10Y33C	Z7-5633	97CC-G33	10%
C18	680		350234-138		D6-681	1R5T68		MS-368	10%
C19	4700		350234-55	BPD-0047	DD-472	BYA10D47	UC-5347	5GA-D47	
C20	.047	200	350240-11	P388N-047		BC2E47J	ACE6147	2BE-S47	
C21	5000		350175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C22	680		350236-36		D6-681	1R5T68		MS-368	10%
C23	1000		350236-34			1R5I1	MCB255	MS-21	10%
C24	4700		350234-55	BPD-0047	DD-472	BYA10D47	UC-5347	5GA-D47	
C25	4700		350234-59	BPD-0047	DD-472	BYA10D47	UC-5347	5GA-D47	
C26	.01	200	350240-7	P283N-01		BC2E1J	ACE501	2BE-S1	
C27	150		350220-5324	1468-00015	DD-151	5WT15	UC-5315	1FM-S15	
C28	.1	400	2502412-13	P488N-1		BC6P1J	ACE401	4BE-P10	
C29	.0047	600	350260-9	P688N-0047		BC6D47J	ACE6247	6BE-D47	
C30	1000		350236-34			1R5I2	MCB355	MS-21	10%
C31	.1	400	2502412-14	P488N-1		BC6P1J	ACE401	4BE-P10	
C32	.15	400	350242-14	P488N-15		BC6P15J		4BE-P15	
C33	.047	400	2502412-11	P488N-047		BC6S47J	ACE6147	4BE-S47	
C34	10000		350234-66	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C35	10000		350234-66	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C36	1000		350236-34			1R5I2	MCB255	MS-21	10%
C37	1000		350236-34			1R5I2	MCB255	MS-21	10%
C38	10000		350234-66	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C39	.047	200	350240-11	P288N-047		BC2E47J	ACE6147	2BE-S47	
C40	360		350235-343	1469-00038		5RS736		MS-336	5%
C41	2200		350228-462	1464-0022		1R5D22		MS-222	10%
C42	.068	600	350243-33	P668N-068		BC6S68J		6BE-S68	
C43	270		350239-343	1468-00027	TCZ-270	5RS727		MS-327	5%
C44	1500		350234-146			1R5I15		MS-215	10%
C45	10000		350234-66	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C46	140	4000	350234-27						
C47	1500		350234-46	BPD-0015	DD-152	BYA10I15	DC5215	5HK-D15	
C48	1500		350234-46	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C49	680		350234-38	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C50	680		350234-38	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C51	300		350235-3	DI-0003	DD-301	LL0T3	UC-533	5GA-T3	
C52	.22	400	350211-15	P488N-22		BC6P22J	GEM-4022	4TM-P22	

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	220132-16				TA55A	Volume
B	Shaft						Not Req.	
C	Switch						US-26	
R2	500K	½	220132-17				TA55L	Brightness
R3 A	500Ω	½	220126-66	B-4	A47-500-8	QU-103	U2	Contrast
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	750K	½	220126-65	B-66	A47-750K-8	QU-136	U54	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	1.25meg	½	220137-1					Vert. Height
B	300Ω	½						Vert. Lin.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R6	1.5meg		230104-100	
R7	5600Ω 5%		230094-177	
R8	750Ω 5%		230094-186	
R9	1000Ω		230104-53	
R10	47Ω		230104-46	
R11	1000Ω		230104-53	
R12	1000Ω		230104-53	
R13	47Ω		230104-46	
R14	1000Ω		230104-53	
R15	15K 5%		230094-187	
R16	1000Ω		230104-53	
R17	120Ω		230104-51	
R18	1.5meg		230104-100	
R19	3300Ω 5%		230094-171	
R20	220K		230104-90	
R21	3900Ω	1	230105-59	
R22	100K		230104-86	Note 1
R23	22meg 5%		230094-207	
R24	6800Ω		230104-72	
R25	220Ω		230104-54	
R26	100K		230104-86	
R27	6800Ω		230104-72	
R28	680Ω		230104-50	
R29	470K		230104-94	
R30	470Ω	1	230105-58	
R31	180Ω		230104-53	
R32	10K		230104-70	
R33	470K		230104-94	
R34	4.7meg		230104-106	
R35	2.2meg		230104-102	
R36	22K		230104-78	
R37	470K		230104-94	

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R38	15000Ω 5%		230094-183	
R39	4700Ω		230104-70	
R40	15000Ω 5%		230094-183	
R41	680K		230104-98	
R42	68K		230104-84	Note 2
R43	470K		230104-94	
R44	180Ω	1	230105-53	
R45	100K		230104-86	
R46	270Ω		230104-55	
R47	270Ω		230104-55	
R48	100K		230104-86	
R49	100K		230104-86	
R50	12Ω	1	230105-39	
R51	470K		230104-90	
R52	4.7meg		230104-106	
R53	10K 5%		230094-183	
R54	3000Ω 5%		230094-186	
R55	130K 5%		230094-210	
R56	180K 5%		230094-213	
R57	22K 5%		230094-191	
R58	180K 5%		230094-213	
R59	15K 5%		230094-187	
R60	560Ω	1	230105-59	
R61	1.2meg 5%		230094-233	
R62	180K 5%		230094-213	
R63	4700Ω		230104-70	
R64	2.2Ω	1	230107-4	
R65	10K		230104-74	
R66	6Ω	20	240078-1	
R67	6Ω	5	240077-1	
R68	100Ω	2	230146-50	

Note 1. Some versions may use 220K in this application.
Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st. Video IF	360736-1					Includes 47.25MC Trap
L2	2nd. Video IF	360737-1					Includes 41.25MC Trap
L3	3rd. Video IF	360662-1					
L4	4th. Video IF	360663-1					Includes Det. Assy.
L5	Shunt Peaking Coil	360667-3	19-4400	TV-302	6136		430 Microhenries
L6	Series Peaking Coil	360667-4	19-3250	TV-186	6181	VP-6	225 Microhenries
L7	Shunt Peaking Coil	360667-2	19-3250	TV-186	6181	VP-6	235 Microhenries
L8	1st. Sound IF	360664-2					
L9	2nd. Sound IF	360718-1					
L10	Quadrature Coil	360719-1					
L11	RF Choke	380801-9					3.3 Microhenries ①

① IRC Part #CLA.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L12	108Ω		360669-2						

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES	RATINGS INDUCTANCE (0 CURRENT 1000 ^A)	REPLACEMENT DATA MAGNAVOX PART No	Halldorson PART No	Merit PART No	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L13	.280A	25Ω	.7 Hy.	320288-2	C5041 ①	C-2996 ①	F-801 ①	C-2328 ①	26C92 ①	C-27X ①

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Osc.	320270-1							
T2	Vert. Output	320269-1	Z1900 ①②	A-2821 ③	V314 ③	A-8149 ③	26S75 ①②③	A-118X ④	
T3A	Yoke-Horiz.(20MH)	380660-1	DF807 ⑤	MDF-92 ⑤	Y90F19/43 ⑤	DY-16A ⑤	Y-16 ⑤	Y-41 & NW-22	
B	(90°)-Vert.(48MH)							YC-1 & CL-1	
M5	Rear Cover & Centering Device	380658-1							
T4	Horiz. Output	380659-1			X153 *	HO-366 *	FLY-149 *		

① Use 7 : 1 turns ratio.
④ Connect as autoformer.
⑤ Drill new mounting hole(s).
④ Use 8 : 1 turns ratio.
⑤ Use original rear cover centering device and original yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
1			1	1	1	
2		2	2	2		
3		3	3	3		
4		4	4	4		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	3300Ω	3-4Ω	320266-2 ①	ZU101	A-3035	AU-605	A-3322	26S53	S-12X	

① Used in Ch. U27-01AA, V27-01AA. Ch. U27-02AA, -03AA, -04AA, V27-02AA, -03AA, -04AA use Part #320266-3.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP	REPLACEMENT DATA MAGNAVOX PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	580045-1	48A1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8300Ω, 8200Ω		Aerovox Centralab Cornell-Dubilier Sprague	PA-110 PC-104 115TM3 V-1
K2	Picture Tube Isolation	470mmf, .3-1meg	250235-1	Centralab Sprague	RC-471 R-9177

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MAGNAVOX PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.325A	530061-1 ①	HE504	1N1008 ①		40K ② M500 ②	① Germanium Type. ② Silicon Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA MAGNAVOX PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2	K6		1N80	1N80	Video Det. (Pigtail)

MISCELLANEOUS

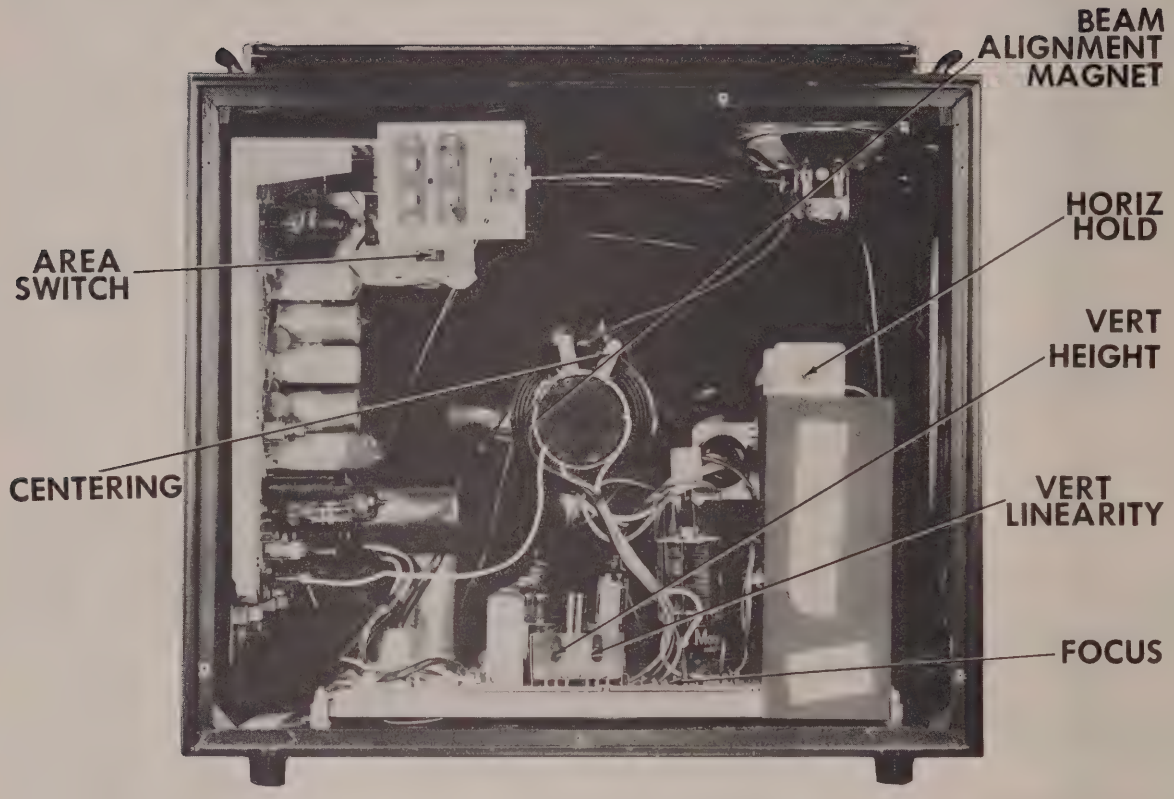
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M3	Tuner	700635-1	VHF, V27 Series
	Tuner	700636-1	VHF with UHF Provisions, U27 Series
	Tuner	700556-1	UHF, U27 Series
M4	Switch	180273-1	Area, TPDT, Slide Type
M5	Centering Device	380658-1	Includes Yoke Rear Cover
M6	Magnet		Beam Alignment
	Printed Board	210018-1	Video IF
	Printed Board	210028-1	Sweep,Sound

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8674
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

MAGNAVOX CHASSIS U27-01AA, -02AA, -03AA, -04AA, V27-01AA, -02AA, -03AA, -04AA (27 Series)

FOLDER 1



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

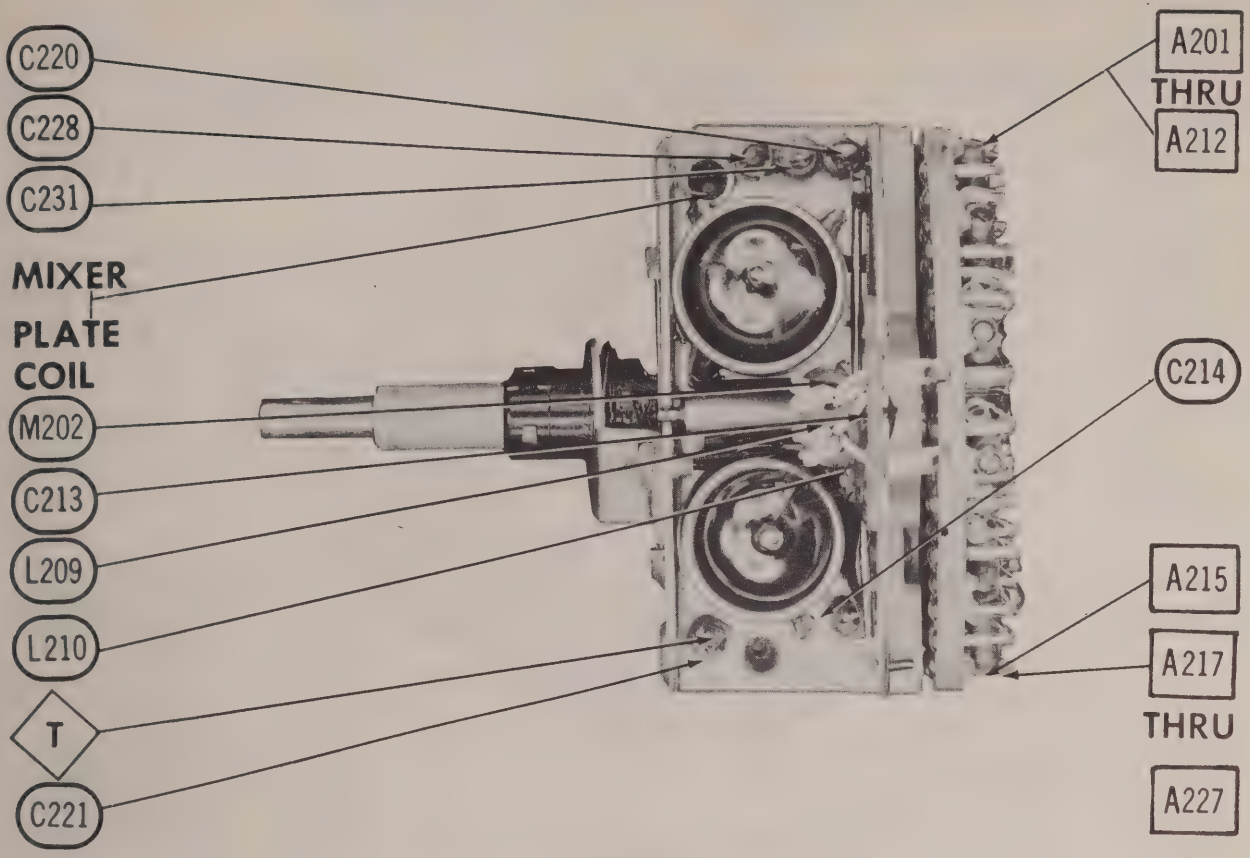
Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

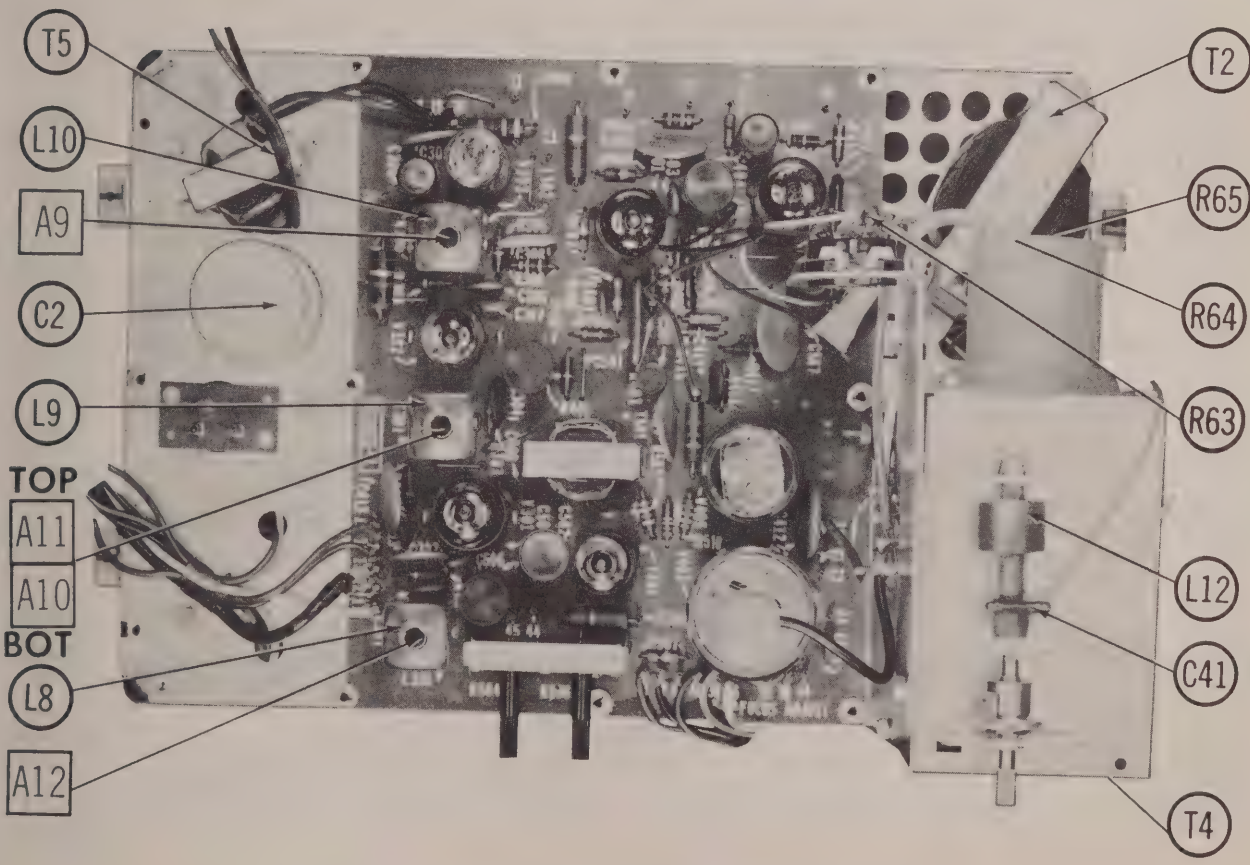
Turn the Horizontal Hold clockwise until the picture loses sync.

It may be necessary to switch off channel and back again for picture to lose sync.

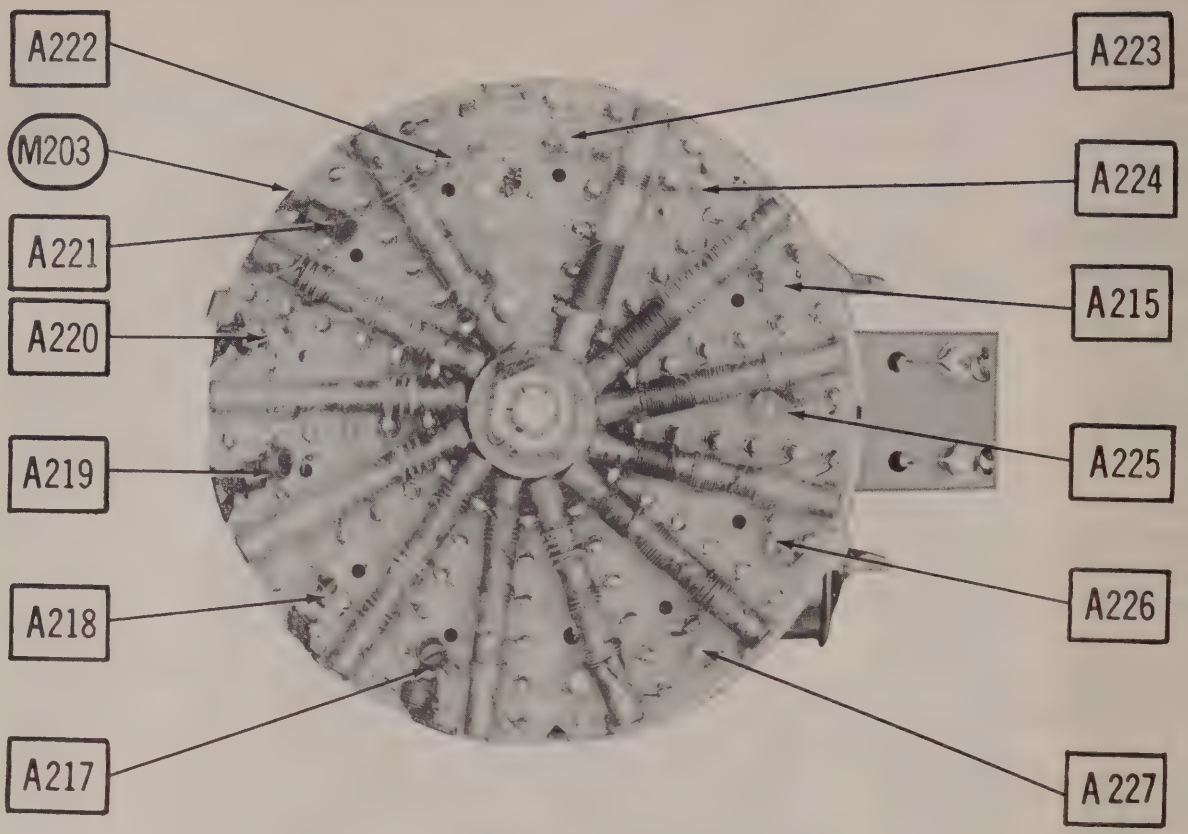
Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.



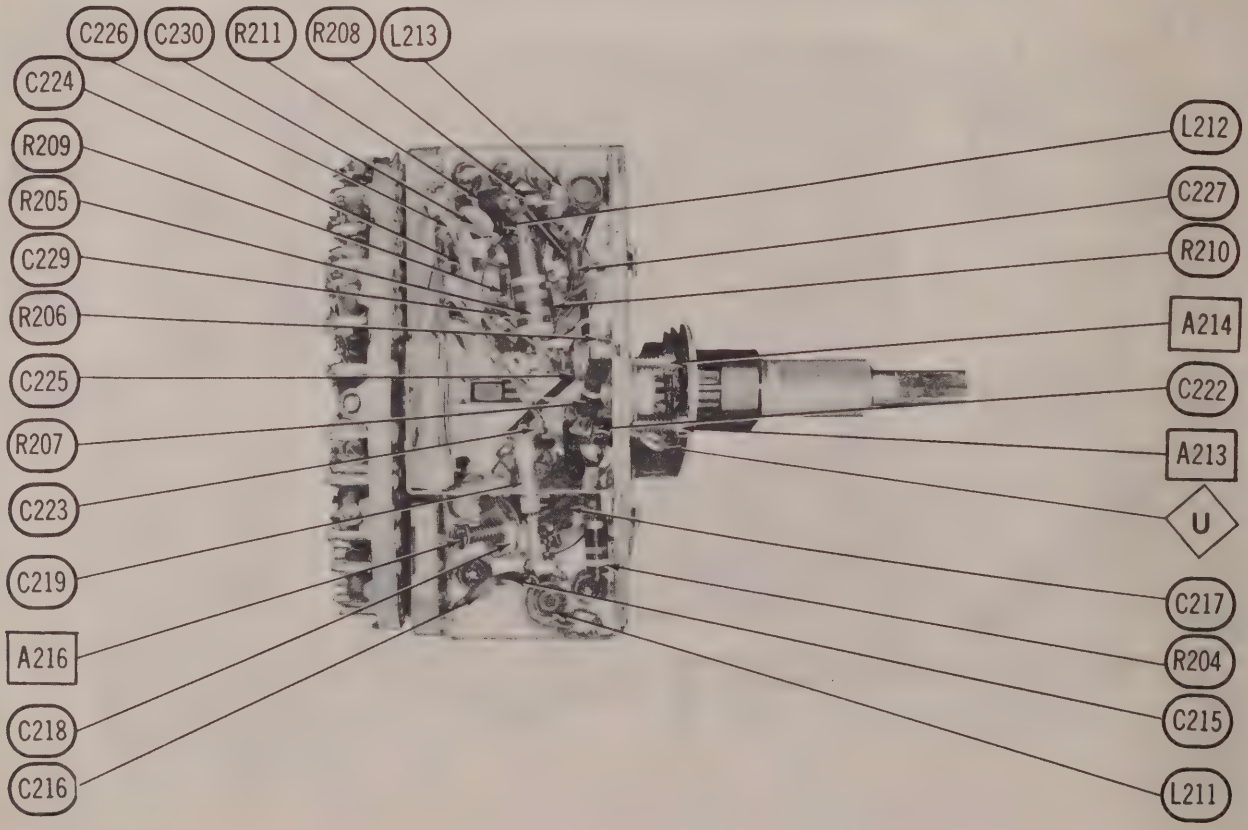
VHF TUNER - TOP VIEW



HORIZONTAL CHASSIS - TOP VIEW



VHF TUNER - REAR VIEW



VHF TUNER - BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	
V202	Mixer-Oscillator	5CG8A	
V203	UHF Oscillator	2AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	1.2		250221-115	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C202			250188-10							
C203	1.0		250221-114	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C204			250188-10							
C205	47		250175-21		TCN-47		TC7-47			N750 5%
C206	.62		250221-1001							5%
C207	10		250088-140							N1500 5%
C208	2.3-4		250220-2							
C209	470		250175-8	BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C210	470		250175-8	BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C211	1000		250272-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C212	800		250266-1							
C213	120		250262-1	BPD-00012	DD-121	L10T12	ED-120	UC-5312	5GA-T12	
C214	30		250263-1							
C215	15		250264-1	NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C216	15		250265-1		TCZ-15		TCO-15			5%
C217	5		250274-1		TCZ-4R7		TCO-5			NPO 5%
C218	2-8		260145-1							
C219	47		250273-1							
C220	800		250266-1							
C221	800		250266-1							
C222	2-6		260144-1							
C223	1000		250272-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C224	51		250267-1							N750
C225	2-6		260144-1							
C226	1.0		250268-1	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C227	1000		250271-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C228	30		250263-1							
C229	10		250270-1		TCN-10		TC7-10			N750 5%
C230	10		250269-1							N900
C231	800		250266-1							
C232	800		250266-1							
C233	470		250175-8	BPD-0047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R201	100K		230104-86	
R202	22K		230104-78	
R203	820Ω	1	230145-61	
R204	4700Ω		230104-70	
R205	470Ω	1	230105-62	Note 1
R206	10K		230104-74	
R207	220K		230104-90	
R208	1000Ω		230104-62	
R209	10K		230104-74	
R210	10K		230104-74	
R211	5600Ω		230104-71	
R212	2200Ω		230104-66	

Note 1. VHF tuner #700624 uses 1000Ω 1W (Part #230105-62) in this application.

COILS (RF-IF)

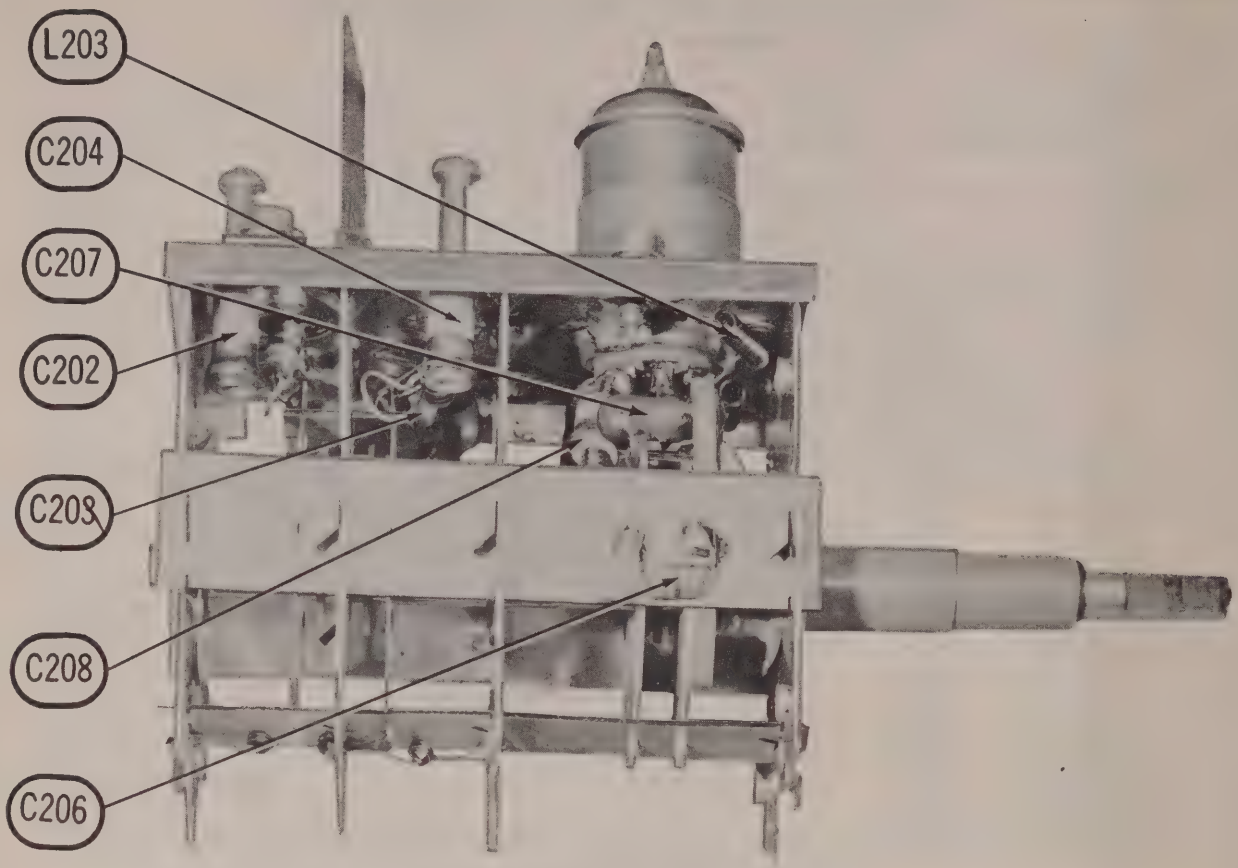
ITEM No.	USE	MAGNAVOX PART No.	NOTES
L201	RF Choke	360574-30	
L202	RF Choke	360574-30	
L203	Cathode Choke	360522-7	
L204	Fil. Choke	360574-8	
L205	Fil. Choke	360574-8	
L206	RF Choke	360574-8	
L207	RF Choke	360574-12	
L208	RF Choke	360574-50	
L209	VHF Ant.Trans.	360744-1	
L210	IF Trap	360740-1	
L211	IF Trap	360741-1	
L212	Osc. Coil	360742-1	
L213	Mixer Plate Coil	360743-1	

CRYSTAL DIODES

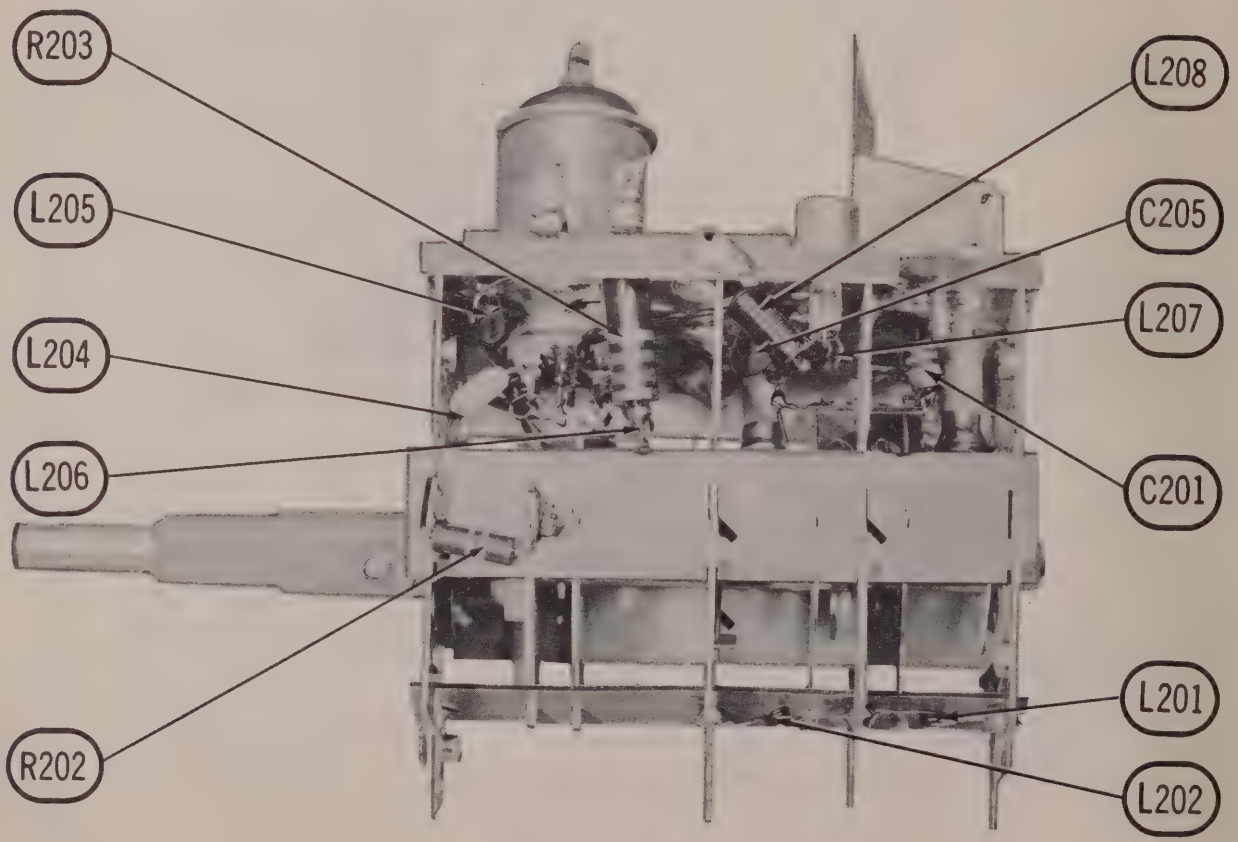
ITEM No.	ORIG. TYPE	REPLACEMENT DATA MAGNAVOX PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M201		530036-1	1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

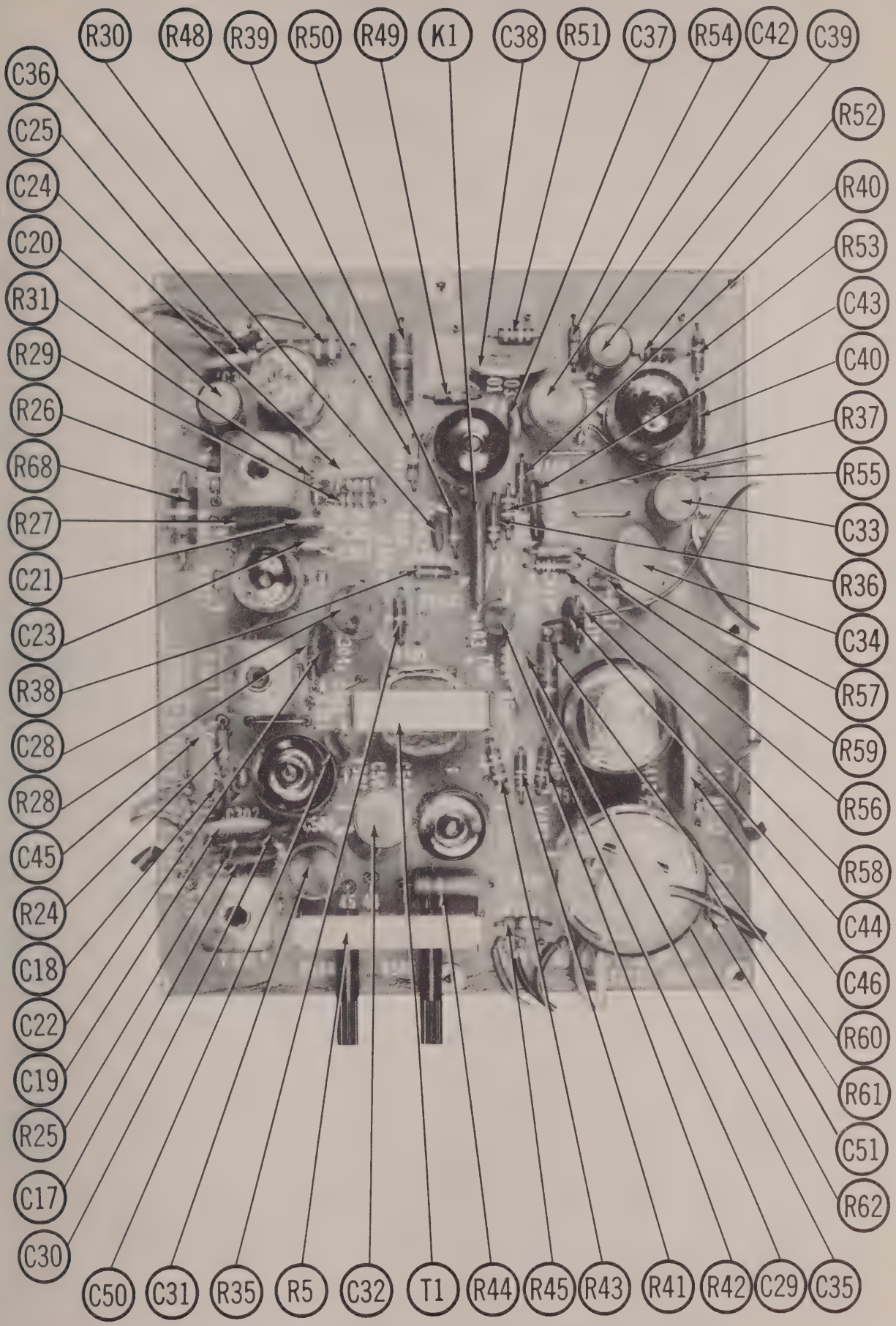
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M202	Ant. Network	460921-1	Includes L209, L210, C213
M203	Rotor Assy.	160283-1	Complete, includes shaft
M204	Rear Cover Assy.	635750-1	Includes coils, caps and contacts UHF-VHF tuner part #700627
	Rear Cover Assy.	635749-1	VHF tuner part #700624
	Extension Contact	635751-1	UHF connections on rotor
	Osc. Slug	110375-1	12 used
	Spring Contact	635748-1	Stator (7 used)



UHF TUNER - LEFT SIDE



UHF TUNER - RIGHT SIDE



HORIZONTAL CHASSIS PRINTED BOARD

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	1.2meg	47Ω	5.5Ω	6.5Ω	†1700Ω	†1100Ω	0Ω		
V2	3BZ6	1.2meg	47Ω	6.5Ω	7.5Ω	†1100Ω	†1100Ω	0Ω		
V3	3CB6	.1Ω	120Ω	7.5Ω	8.5Ω	†1100Ω	†1100Ω	0Ω		
V4	6AW8A	0Ω	3.5meg	‡2.2meg	9.5Ω	8.5Ω	•180Ω	220K	†100Ω	†4000Ω
V5	5BR8	•800K	‡520K	0Ω	9.5Ω	10.5Ω	†6800Ω	†6800Ω	220Ω	.8Ω
V6	3DT6	3.2Ω	680Ω	10.5Ω	11Ω	‡470K	†6800Ω	100K		
V7	12CA5	180Ω	0Ω	12Ω	15Ω	0Ω	†470Ω	†650Ω		
V8	6BJ8	12Ω	5.3meg	12Ω	12Ω	11Ω	5.3meg	†1600Ω	22K	1500Ω
V9	12R5	•300Ω	• 650K	2.5Ω	0Ω	•650K	†100Ω	†280Ω		
V10	6CG7	‡10K	4.7meg	2000Ω	15Ω	16Ω	‡180K	130K	2000Ω	0Ω
V11	25DN6	NC	23Ω	0Ω	NC	195K	NC	18Ω	†560Ω	TOP CAP ‡10Ω
V12	12D4	TP	NC	¶250K	NC	†2.4Ω	NC	16Ω	18Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡525Ω
V14	17CNP4	4Ω	100K	Pin 6 0Ω	Pin 10 130K	Pin 11 140K	Pin 12 2.5Ω			
V201	2BN4	0Ω	4700Ω	5.5Ω	5Ω	†1100Ω	0Ω	4700Ω		
V202	5CG8	10K	†5600Ω	0Ω	4Ω	5Ω	†1000Ω	†10K	0Ω	230K
ITEM	TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

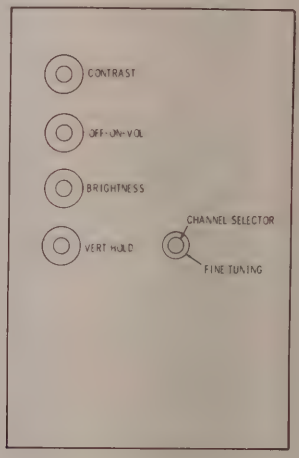
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

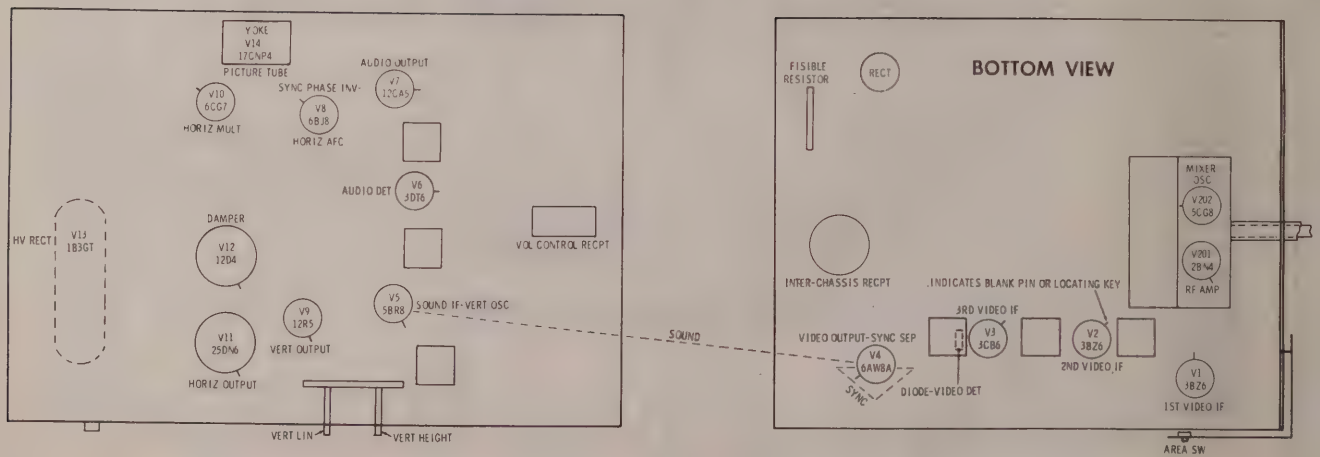
† MEASURED FROM 140V SOURCE.

‡ MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION

TP TIE POINT





TUBE PLACEMENT CHART

DISASSEMBLY INSTRUCTIONS

CHASSIS DISASSEMBLY

1. Remove 6 side push-on type control knobs.
2. Remove 1 metal screw and release 3 clips holding rear cover. Remove rear cover.
3. Remove 2 metal screws holding AC interlock bracket to cabinet.
4. Remove picture tube socket, high voltage lead, yoke plug, 2 speaker leads and ground lead from chassis to picture tube strap.
5. Remove 2 chassis bolts from the top and 2 from the bottom.
6. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 8100BE (CH. 528.50180)

TRADE NAME Silvertone	MODEL	CHASSIS	MODEL	CHASSIS
	8100BE, 8100GR	528.50180	8110, 8112, 8150, 8152	528.50221
	8100BE, 8100GR	528.50181	8111, 8113, 8151, 8153	528.50230
	8100BE, 8100GR	528.50182	8111, 8113, 8151, 8153	528.50240
	8102AAQ, 8102ACL, 8102AQ, 8102CL, 8102YL, 8106	528.50200	8146, 9100, 9100EB, 9100FG, 9101, 9101EB, 9101FG, 9102AQ, 9102BL,	
	8102AAQ, 8102ACL, 8102AQ,		9102CL, 9102GY, 9110, 9150	528.50240
	8102CL, 8102YL, 8106	528.50201	8147, 9103AQ, 9103BL,	
	8102AAQ, 8102ACL, 8102AQ,		9103CL, 9103GY	528.50250
	8102CL, 8102YL, 8106	528.50202	9111, 9151	528.50270
	8110, 8112, 8150, 8152	528.50220		

MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 145 Watts, 1.36 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 5 o'clock, and should be adjusted first. The LOW band adjustment is located at 9 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 metal screws from the bottom front of cabinet holding the picture tube mask. Pull out at bottom and remove.

SPECIAL ADJUSTMENTS

A. Focus
Focus may be varied by connecting the picture tube focus lead (blue) to any of 4 terminals with different voltages. (For location, see Cabinet Rear View.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A Circuit Breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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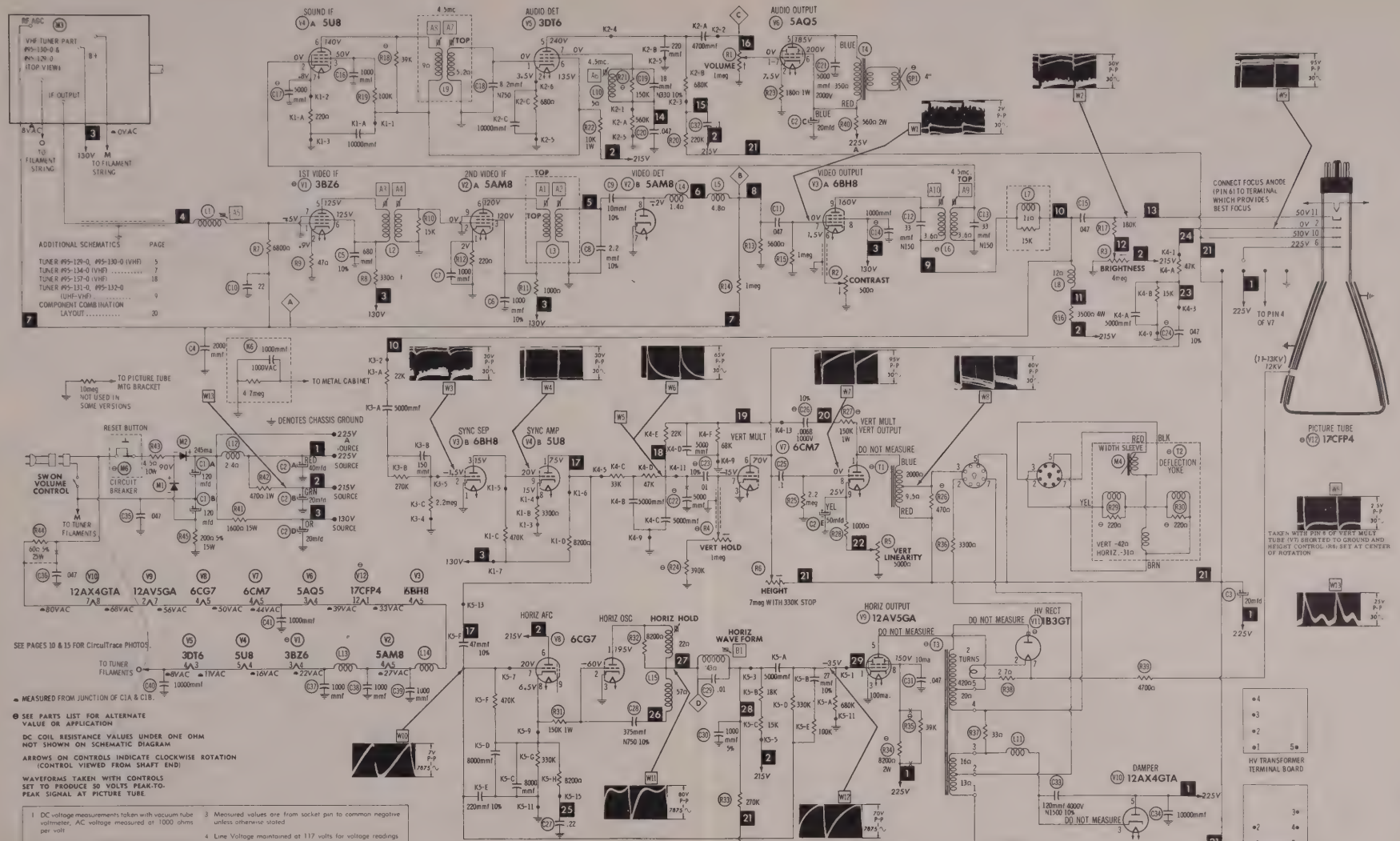
SILVERTONE CHASSIS 528.50180, 181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270
SET 411 FOLDER 2


SOUND IF V4 A 5U8
AUDIO DET V5 3DT6
AUDIO OUTPUT V6 5AQ5
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 A 5AM8
VIDEO DET V2 B 5AM8
VIDEO OUTPUT V3 A 6BH8
VOLUME
CONTRAST
BRIGHTNESS
CONNECT FOCUS ANODE (PIN 6) TO TERMINAL WHICH PROVIDES BEST FOCUS
TO PIN 4 OF V7
PICTURE TUBE V12 17CFP4
SYNC SEP V3 B 6BH8
SYNC AMP V4 B 5U8
VERT MULT V7 6CM7
VERT MULT VERT OUTPUT
VERT HOLD
VERT LINEARITY
HEIGHT
7meg WITH 330K STOP
DEFLECTION YOKE
WIDTH SLEEVE
VERT -42Ω HORIZ -31Ω
TAKEN WITH PIN 8 OF VERT MULT TUBE (V7) SHORTED TO GROUND AND HEIGHT CONTROL (R6) SET AT CENTER OF ROTATION
HORIZ AFC V8 6CG7
HORIZ OSC
HORIZ HOLD
HORIZ WAVE FORM
HORIZ OUTPUT V9 12AV5GA
HV RECT V11 1B3GT
DAMPER V10 12AX4GTA
DO NOT MEASURE
BOOST 510V
HV TRANSFORMER TERMINAL BOARD
HV TRANSFORMER TERMINAL BOARD USED IN SOME VERTIONS
RF AGC
VHF TUNER PART #95-130-0 & #95-129-0 (TOP VIEW)
IF OUTPUT
TO FILAMENT STRING
130V
TO TUNER FILAMENTS
SW ON VOLUME CONTROL
CIRCUIT BREAKER
RESET BUTTON
TO PICTURE TUBE MTG BRACKET
NOT USED IN SOME VERSIONS
TO METAL CABINET
DENOTES CHASSIS GROUND
225V SOURCE
215V SOURCE
130V SOURCE
12AX4GTA 7A8
12AV5GA 7A7
6CG7 6A8
6CM7 6A5
5AQ5 3A4
17CFP4 12A1
6BH8 4A2
3DT6 6A3
5U8 5A4
3BZ6 3A4
5AM8 6A5
SEE PAGES 10 & 15 FOR CircuiTrace PHOTOS
MEASURED FROM JUNCTION OF C1A & C1B.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
ADDITIONAL SCHEMATICS PAGE
TUNER (#95-129-0, #95-130-0 (VHF)) 5
TUNER (#95-134-0 (VHF)) 7
TUNER (#95-157-0 (VHF)) 18
TUNER (#95-131-0, #95-132-0 (UHF-VHF)) 9
COMPONENT COMBINATION LAYOUT 20

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CircuiTrace®

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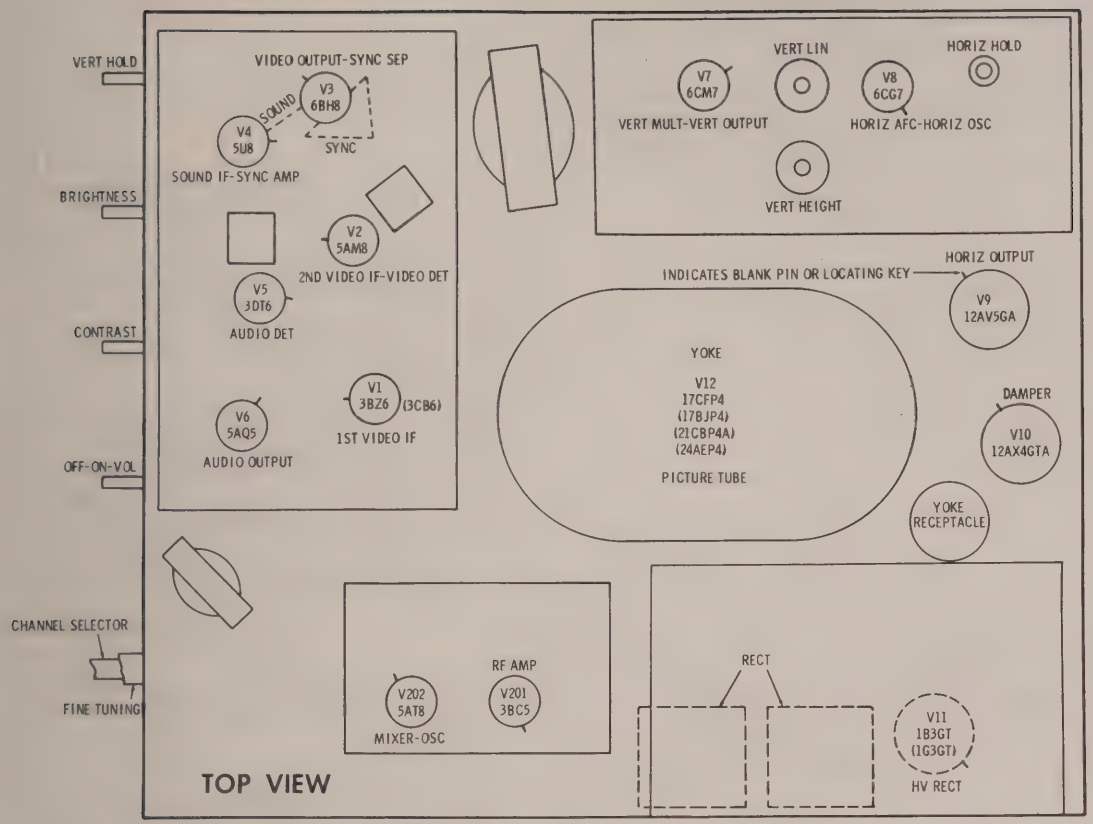
SILVERTONE CHASSIS 528.50180, 181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270

TUBE PLACEMENT CHART



SILVERTONE CHASSIS 528.50180, 181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

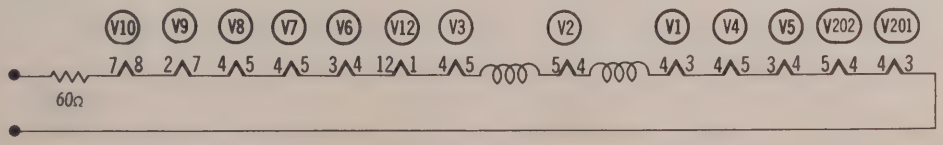
POWER SUPPLY FAILURE
No raster, no sound Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture M1, M2, V8, V9, V10
Vert. off freq. V7
Horiz. off freq. V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5, V6

SYNC FAILURE
No vert. sync V3, V4
No horiz. sync V3, V4
No vert. or horiz. sync V3, V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 2 (grid) of 5AM8 (V2). Low side to chassis.	44.0MC (10MC Swp)	44.0MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across Video Det. load)	A1	Preset A2 fully counterclockwise. Adjust for maximum gain at marker as in Fig. 1.
2.	"	"	44.25MC (10MC Swp)	43.2MC 45.3MC	"	"	A2	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3.	"	High side to pin 1 (grid) of 3BZ6 (V1). Low side to chassis.	44.1MC (10MC Swp)	44.0MC	"	"	A3	Preset A4 fully counterclockwise. Adjust A3 for maximum gain at marker as in Fig. 1.
4.	"	"	44.25MC (10MC Swp)	43.6MC 45.0MC	"	"	A4	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
5.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202).	44.0MC (10MC Swp)	44.0MC	"	"	Mixer Plate Coil	Detune A5. Adjust sweep generator output until signal level is about 1 volt above noise on scope. Adjust Mixer Plate Coil for maximum gain at 44.0MC.
6.	"	"	44.25MC (10MC Swp)	42.75MC 43.6MC 45.0MC 45.75MC	"	"	A5	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown. If necessary retouch Mixer Plate Coil to correct 45.75MC region of response and A5 affects 42.75MC region.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (15KC Swp 400∿ Mod)	Any non-interfering channel	AC probe to point (C). Common to chassis.	A6, A7	Adjust A6 and A7 for maximum deflection. (A6 may have two peaks, use the greatest.)
8.	"	"	"	"	"	A8, A7, A9	Adjust in that order for maximum deflection. (Use low generator output so that meter reading does not exceed 4.5 volts RMS.)

4.5MC TRAP ALIGNMENT

4.5MC beat interference in the picture may be eliminated by misadjusting the Fine Tuning until the beat pattern is visible in the picture and adjust A10 for MINIMUM 4.5MC beat pattern in the picture.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

FIG. 1

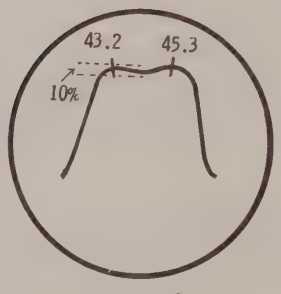


FIG. 2

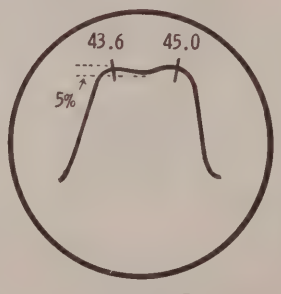


FIG. 3

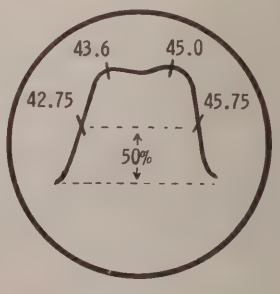
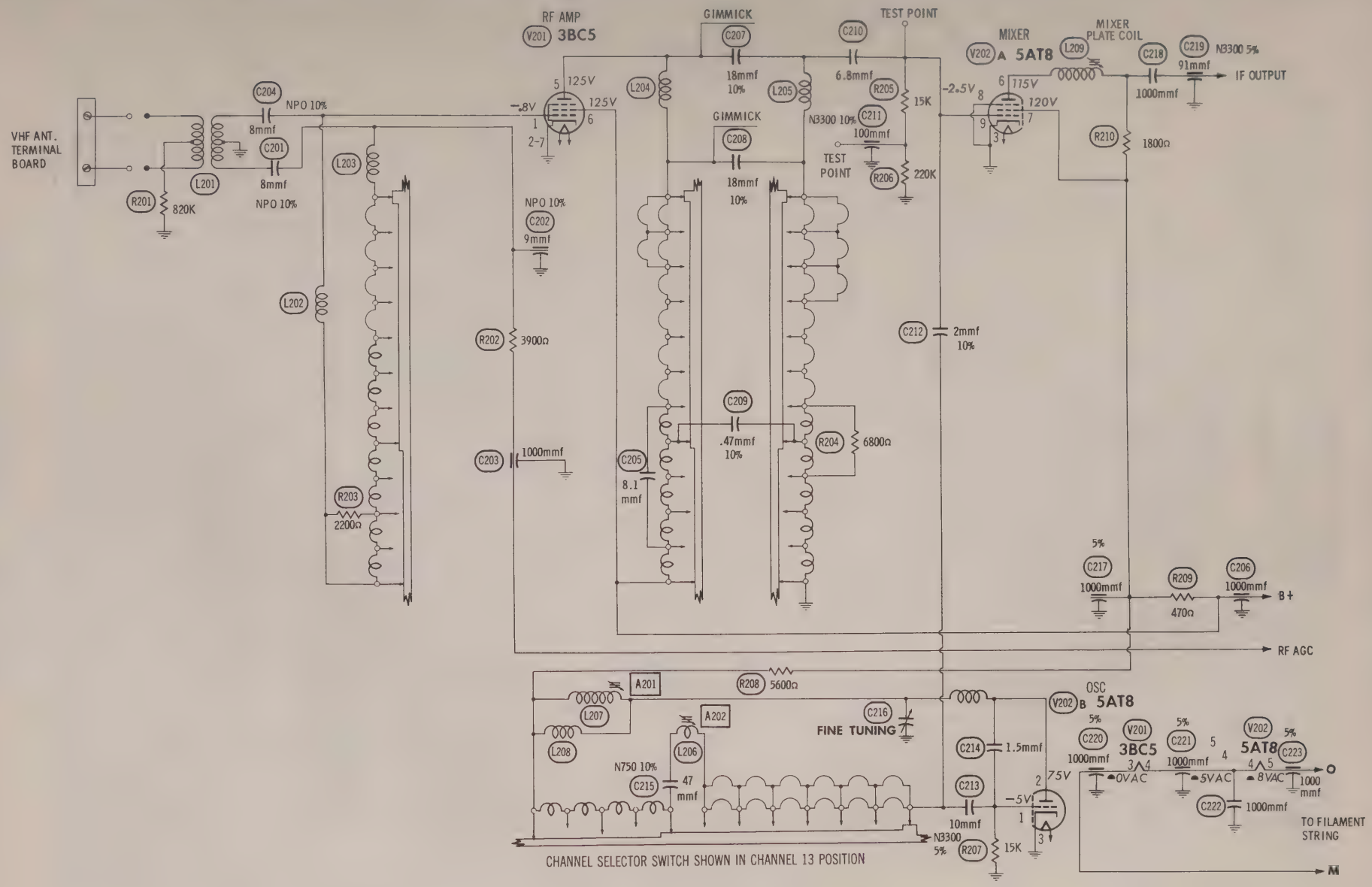


FIG. 4



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VHF TUNER #95-129-0 OR #95-130-0

SILVERTONE CHASSIS 528.50180, 181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	3BC5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	8		162-809			CTA6V8C			NPO 10%
C202	9		260-909			CTA6V9C			NPO 10%
C203	1000		2033-23	EF-001	MFT-1000			503C-D1	
C204	8		162-809			CTA6V8C			NPO 10%
C205	8.1								
C206	1000		2033-23	EF-001	MFT-1000			503C-D1	
C207	.18		2101-188						10%
C208	.18		2101-188						10%
C209	.47		2101-478						10%
C210	6.8		228-689	NPO-D1 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	
C211	100		252-101						N3300 10%
C212	2		2101-209						10%
C213	10		165-100						N3300 5%
C214	1.5		171-159	NPO-S1 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	
C215	47		233-470	N750-D1 47	DTZ-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C216			2262-506						
C217	1000		244-1						5%
C218	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C219	91		253-910						N3300 5%
C220	1000		244-1						5%
C221	1000		244-1						5%
C222	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C223	1000		244-1						5%

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R201	820K		106-824	
R202	3900Ω		106-392	
R203	2200Ω		106-222	
R204	6800Ω		106-682	
R205	15K		106-153	

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R206	220K		111-224	
R207	15K		106-153	
R208	5600Ω		106-562	
R209	470Ω		111-471	
R210	1800Ω		106-182	

COILS (RF-IF)

ITEM No.	USE	Silvertone PART No.	NOTES
L201	Ant. Trans.	2266-1	
L202	Ant. Coil	310-9	Channel 13
L203	RF Choke	310-9	
L204	RF Coil	300-14	Channel 13
L205	Mixer Grid Coil	301-6	Channel 13

ITEM No.	USE	Silvertone PART No.	NOTES
L206	Osc. Coil	5381-14	Channel 6
L207	Osc. Coil	5381-13	Channel 13
L208	Osc. Coil	310-7	Channel 13
L209	Mixer Plate Coil	2110-8	

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

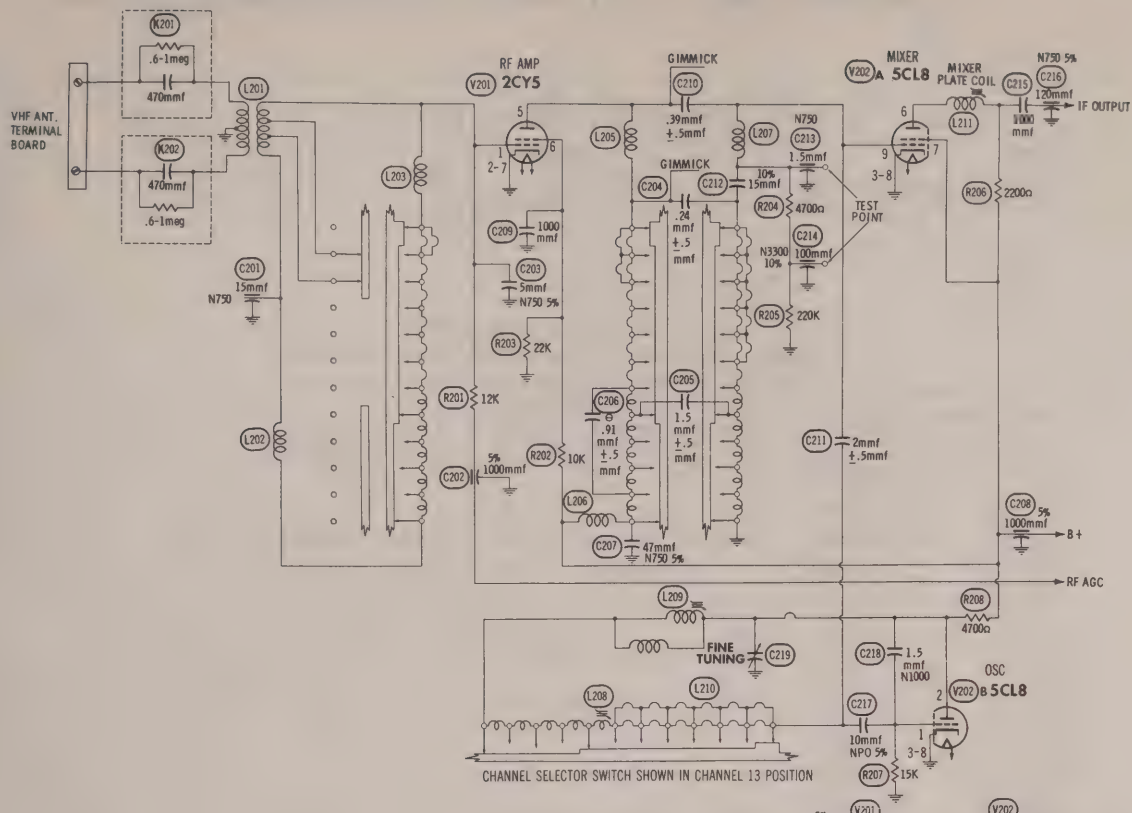
Set the Fine Tuning to the center of its range (flat of Fine Tuning shaft parallel with top of tuner). Set the Channel Selector to the highest high band channel (13-7) operating in the area. Adjust the high band oscillator adjustment slug (A201 located at 5 o'clock) for best picture and sound.
Switch Channel Selector to the highest low band channel (6 - 2) operating in the area and adjust the low band oscillator adjustment (A202 located at 9 o'clock) for best picture and sound. Recheck high band adjustment.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



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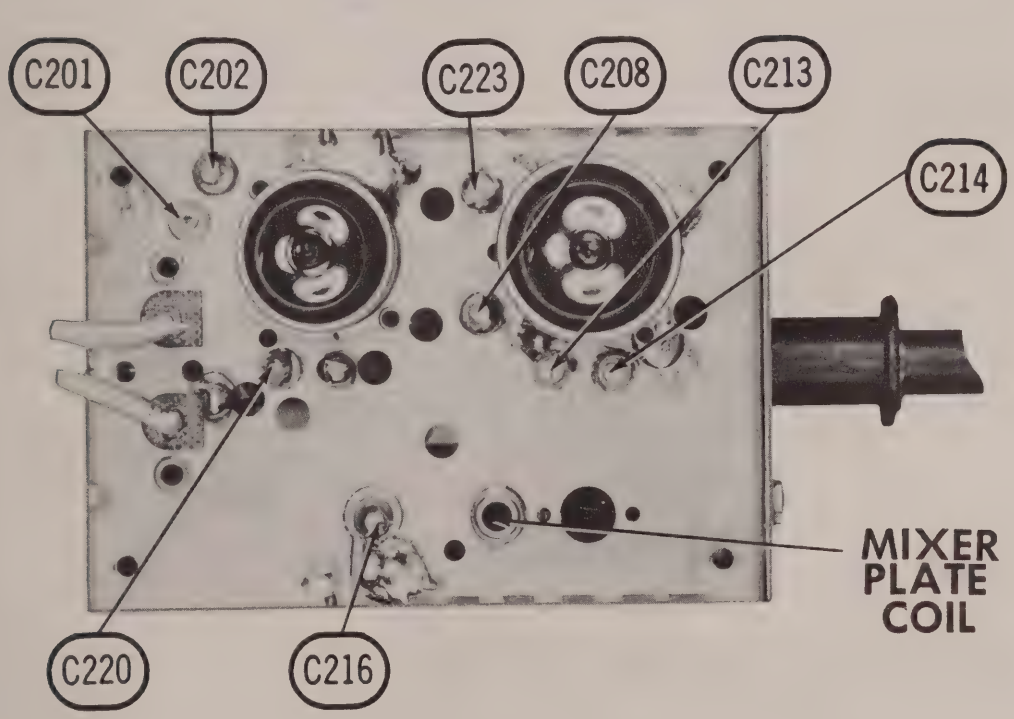
VHF TUNER #95-134-0



VHF TUNER #95-134-0 - TOP VIEW

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	15		258-150						N750
C202	1000		244-1						
C203	5		225-509						N750 5%
C204	.24		2101-248						±.5mmf
C205	1.5		2101-159	NPO-SI 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	±.5mmf
C206	.91								±.5mmf ①
C207	47		233-470		DTN-47				
C208	1000		244-1						
C209	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C210	.39		2101-398						±.5mmf
C211	2		2101-109	NPO-SI 2					±.5mmf
C212	15		222-150	NPO-DI 15	DD-150	L10Q15		5TCC-Q1	10%
C213	1.5		259-159						N750
C214	100		252-101						N3300 10%
C215	1000		2033-23	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C216	120		246-121						
C217	10		163-100		TCZ-10				NPO 5%
C218	1.5		173-159						N1000
C219			2262-506						
C220	1000		244-1						
C221	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C222	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C223	1000		244-1						

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R201	12K		106-123	
R202	10K		106-103	
R203	22K		106-223	
R204	4700Ω		106-472	

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R205	220K		111-224	
R206	2200Ω		106-222	
R207	15K		106-153	
R208	4700Ω		106-472	

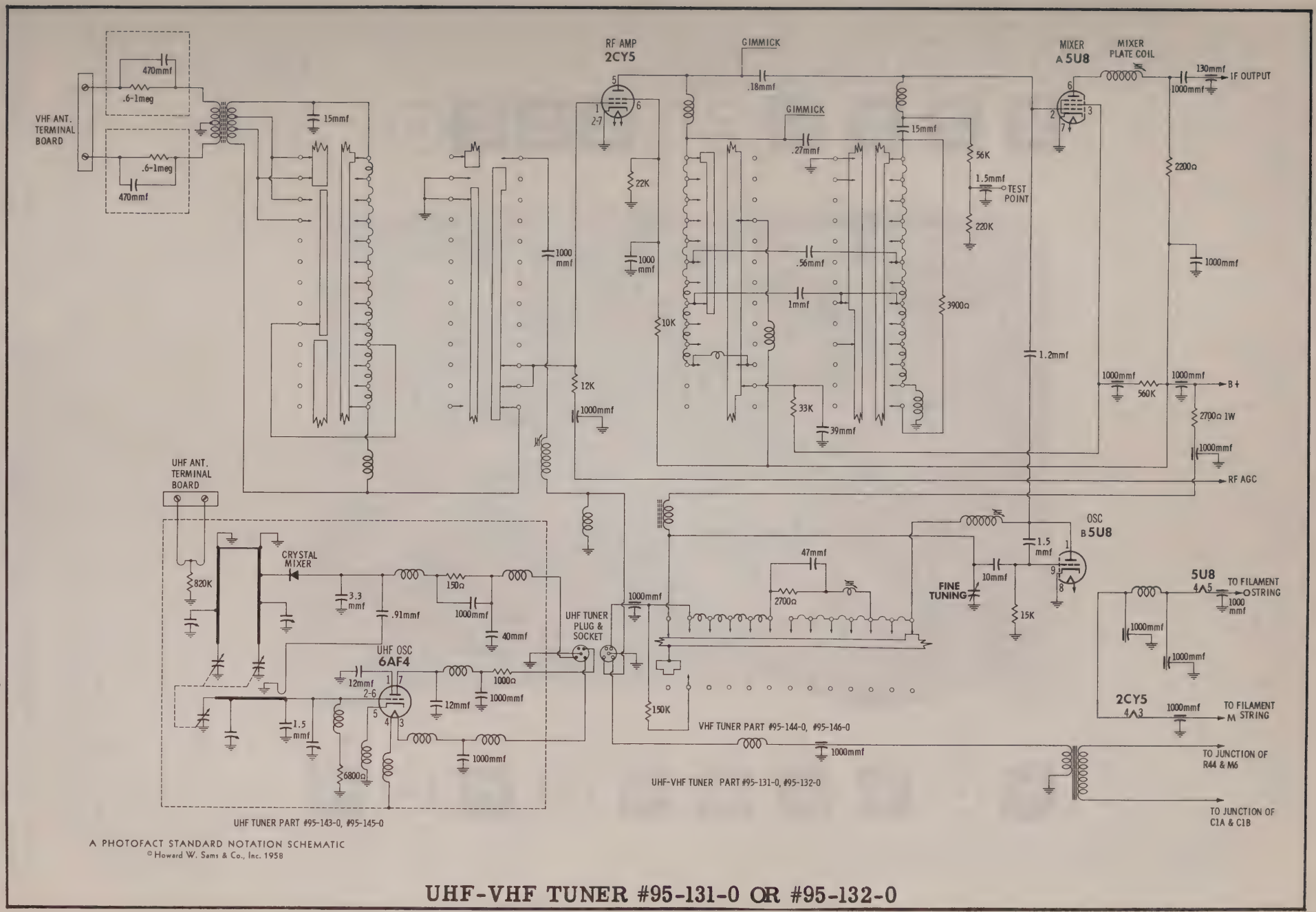
COILS (RF-IF)

ITEM No.	USE	Silvertone PART No.	NOTES
L201	Ant. Trans.	2309-5	
L202	RF Choke	310-5	
L203	Ant. Coil	310-5	Channel 13
L204	Fil. Choke	314-10	
L205	RF Coil	313-7	Channel 13
L206	RF Choke	301-25	

ITEM No.	USE	Silvertone PART No.	NOTES
L207	Mixer Grid Coil	312-7	Channel 13
L208	Osc. Coil	5381-14	Channel 6
L209	Osc. Coil	5381-13	Channel 13, Adj.
L210	Osc. Coil	310-8	Channel 13
L211	Mixer Plate Coil	2110-9	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Silvertone PART No.	REPLACEMENT DATA
K201	Ant. Coupling	470mmf, .6-1meg	330-1	
K202	Ant. Coupling	470mmf, .6-1meg	330-1	



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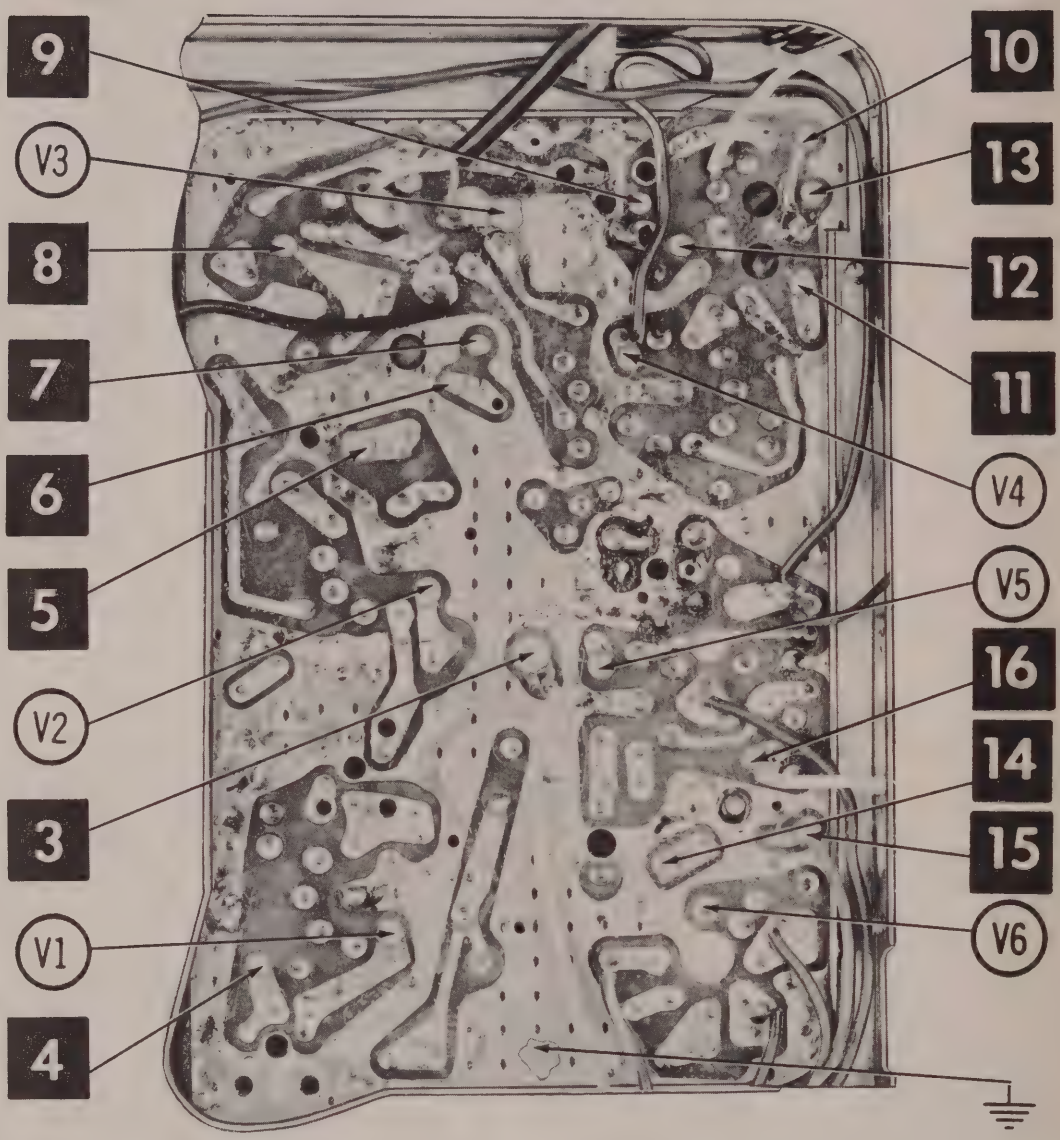
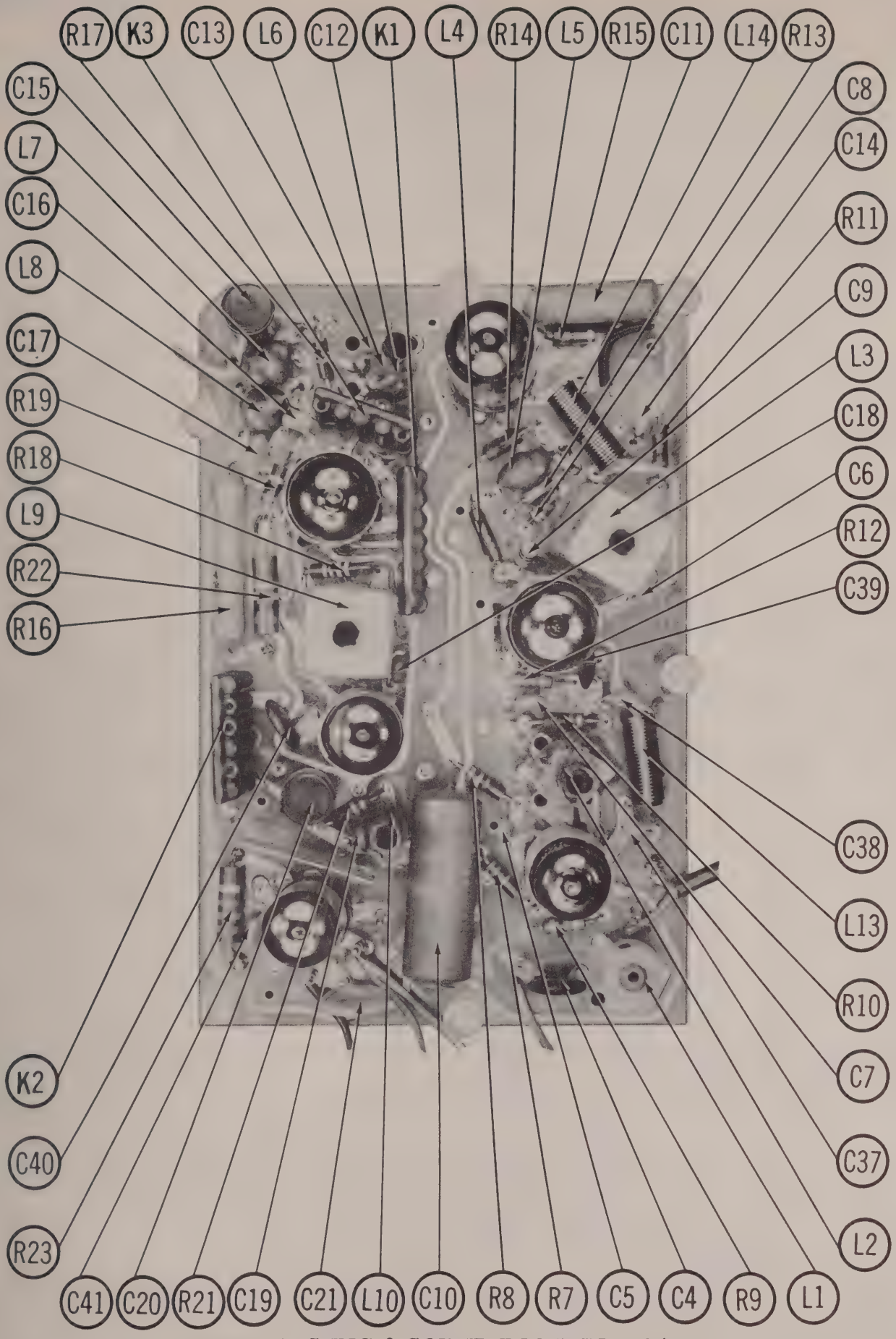
UHF-VHF TUNER #95-131-0 OR #95-132-0



A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

VIDEO IF, SYNC & SOUND PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



VIDEO IF, SYNC & SOUND PRINTED BOARD

SET 411 FOLDER 2

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	3CB6 *
V2	2nd Video IF Amp, - Video Det	5AM8	
V3	Video Output-Sync Sep	6BH8	
V4	Sound IF Amp -Sync Amp	9U8	
V5	Audio Det.	3DT6	
V6	Audio Output	9AQ8	

ITEM No.	USE	TYPE	NOTES
V7	Vert. Mult -Vert Output	6CM7	
V8	Horiz. AFC-Horiz. Osc.	6CG7	
V9	Horiz Output	12AV5GA	
V10	Damper	12AX4GTA	
V11	HV Rect.	1B3GT	1G3GT*

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	Silvertone PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V12	17CEP4			17CEP4 ②	① "Silverama" ③
	17BJP4		17BJP4 ①	17BJP4 ③	② "Silver Screen 85"
	21CBP4-A ①		21CBP4	21CBP4	
				21CBP4A ②	
	24AEP4		24AEP4 ①	24AEP4 ②	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Silvertone PART No	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	120	150	18-60-5	PRS-050		TQ496		MT-15150	R3536 *
B	180	150				TQ496		MT-15150	
C2A	40	300	18-33-3	PRS-500		WV404			R3335 *
B	20	300							
C	20	300							
D	20	300							
E	50	50							
C3	20	300	18-57-5	NP-PRS300V 20	BR4035 † BR4035	TC78 † TC78	TD-40-350 † TD-40-350	MT-4540 MT-4540	R3449 *

† Connect negative leads together.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Silvertone PART No	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	SPRAGUE PART No	
C4	3000		15-30217	BPD-003	DD-302	BYA10D2	DC522	5HK-D2	
C5	680		15-68111		MD-681				10%
C6	1000		15-10211						10%
C7	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C8	2.2		30-2-3	NPO-S1.2.2	TCZ-2R2	CTA5V22C		5TCCB-V22	10%
C9	10		30-14-0	NPO-S1 10	TCZ-10		ET-541	5TCC-Q1	10%
C10	.22	200	18-22428	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C11	.047	200	18-47328	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C12	33								N150
C13	33								N150
C14	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C15	.047	400	30-44-1	P488N-047	DF-503	BC8S47	ACE6147	4SE-S47	
C16	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C17	5000		15-50217	BPD-005	DD-502	BYA10D5		5HK-D5	
C18	8.2		30-18-0			C10V48U			N750
C19	18								N330 10%
C20	.047	200	18-47328	P288N-047	DF-503	BC8S47J	ACE6147	2SE-S47	
C21	5000	2000	30-79-0		DD30-502	HVC20D5		30HK-D5	
C22	5000		30-29-0	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C23	.01	600	18-10357				GEM-1611		10% ②
C24	.047	400	18-47347						10% ③
C25	.1	400	18-10448	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C26	.0068	1000	18-68267				GEM-16288		10% ④
C27	.22	200	18-22428	P288N-22		CUB4P22	GEM-2022	2TM-P22	
C28	.375	400	30-107-0						N750 10%
C29	.01	600	20-19-1	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C30	1000		20-9-2	1469-001		1R5D1	MCB251	MS-31	5%
C31	.047	400	30-54-1	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C32	.1	400	18-10448	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C33	120	4000	15-12416						N1500 10%
C34	10000		15-10317	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C35	.047	600	30-647-1	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C36	.047	600	20-647-1	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C37	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C38	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C39	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C40	10000		15-10317	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C41	1000		15-10217	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	

① Ch. 528.50182, 202, 221, 231, 240, 250 and 270 use 10000mmf in this application (Part #15-10317).
② Ch. 528.50240, 250, 270 use .0068mfd 10% 600V in this application (Part #16-68257).
③ Ch. 528.50181, 182, 201, 202, 220, 221, 230, 231 use .068mfd 400V in this application (Part #16-68347).
Ch. 528.50240, 250, 270 use .056mfd 400V 10% in this application (Part #16-56247).
④ Ch. 528.50181, 182, 201, 202, 220, 221, 230, 231, 240, 250, 270 use .01mfd 1000V in this application (Part #16-10367).

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	24-304-0	B-70	A47-1meg-2	Q13-137	TA18A	Volume
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
C	Switch			KB-1or KR-1*	SWE-12	78-1	UB-28	
R2A	500Ω	½	24-78-1	B-4	A47-500-8	Q11-103	TA52L	Contrast
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R3A	4meg	½	24-264-1	B-66	A47-4meg-8			Brightness
B	Shaft			Not Req.	KSB-3			
R4A	1meg	½	24-108-1	B-69	A47-1meg-8	Q11-137	TA18L	Vert. Hold, Note 1
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R5	5000Ω	½	24-267-1					Vert. Lin.
R6	1meg	½	24-266-1					Height with 330K stop

* Use KR-1 with CR1L "red label" controls and KB-1 with "blue label" controls.
Note 1. Alternate Part #24-113-1.

PARTS LIST AND DESCRIPTIONS

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Silvertone PART No.	NOTES
R7	6800Ω		60-68201	
R8	330Ω		60-33102	
R9	47Ω		60-47001	
R10	15K		60-15301	
R11	1000Ω		60-10302	
R12	220Ω		60-22101	
R13	5600Ω		60-56201	
R14	1meg	1	60-10502	
R15	1meg	1	60-10502	
R16	3500Ω	6	61-113	
R17	180K		60-18401	
R18	33K		60-33301	Note 1
R19	100K		60-10401	
R20	220K		60-22401	
R21	150K		60-15401	Note 2
R22	10K	1	60-10311	
R23	180Ω	1	60-18111	
R24	39OK		60-39401	Note 3
R25	2.2meg		60-22502	
R26	470Ω		60-47112	Note 4

ITEM No	RATING OHMS	RATING WATT	Silvertone PART No.	NOTES
R27	150K	1	60-15411	Note 5
R28	1000Ω		60-10302	
R29	220Ω			Note 6
R30	220Ω			Note 6
R31	150K	1	60-15411	
R32	8300Ω		60-83301	
R33	270K		60-27401	
R34	8300Ω	2	60-83321	Note 7
R35	39K		60-39301	Note 7
R36	3300Ω		60-33301	
R37	33Ω		60-33001	
R38	2.7Ω		60-27901	
R39	4700Ω		60-47202	
R40	560Ω	2	60-56121	
R41	1800Ω	15	61-11	
R42	470Ω	1	60-47112	
R43	4.5Ω	10	61-115	
R44	500 5%	25	61-117	
R45	2000 6%	15	61-41	

Note 1. Some versions may use 33K (Part #60-33301) or 47K (Part #60-47301) in this application.
Note 2. Ch. 528.50181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250 and 270 use 100K in this application. (Part # 60-10401).
Note 3. Some versions may use 560K (Part #60-56401), or 680K (Part #60-68401) in this application.
Note 4. Not used in some versions.
Note 5. Ch. 528.50181, 182, 201, 202, 220, 221, 230, 231, 240, 250 and 270 use 100K, 1W in this application. (Part #60-10412).
Note 6. Value may vary slightly. Replace with original value.
Note 7. Some versions may use a single 68000 2W to replace R34 and R35 (Part #60-68321).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Silvertone PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st. Video IF	10-16-3					
L2	2nd. Video IF	10-15-3					
L3	3rd. Video IF	10-77-2					
L4	Resonant Choke	10-69-1					12 Microhenries
L5	Series Peaking Coil	10-64-1		TV-103	6110		60 Microhenries Note 1
L6A	4.5MC Trap	10-130-1					
B	1st. Sound IF						
L7	Series Peaking Coil	10-66-1	19-3250 *	TV-198 *	6130 *	VP-6 *	270 Microhenries, wound on 15K resistor
L8	Shunt Peaking Coil	10-86-1	19-3250	TV-198	6130	VP-6	359 Microhenries
L9	2nd. Sound IF	10-100-3					
L10	Quadrature Coil	10-12-5					
L11	RF Choke	10-136-1	19-1002	SW-830	4606		2.6 Microhenries
L12	RF Choke	10-136-1	19-3250	TV-198	6130	VP-6	370 Microhenries
L13	Fil. Choke	10-122-1	19-1002	BC-563	4606		2 Microhenries
L14	Fil. Choke	10-122-1	19-1002	BC-563	4606		2 Microhenries

* Parallel with 15K resistor.
Note 1. Part #10-146-1 used in Ch. 528.50181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Silvertone PART No.	Meissner PART No	Merit PART No.	Miller PART No	Ram PART No	Thordarson PART No	NOTES
LJ5	79Ω *	43Ω	10-13-5						* Tapped ③ 57Ω

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA Silvertone PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No.	NOTES
T1	Vert. Output	B60-1-2F	Z1807 ①	A-2824 ①	V315 ①	VO-101 ②	26876	A-11BX ①	
	Alt. Vert. Output	B60-1-2							
T2 A	Yoke-Horiz. (20MH)	D80-5-4A	DF-807	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°)-Vert. (46MH)	③	④⑤⑥	④⑤⑥	④⑤⑥	④⑤⑥	④⑤⑥	NW23④⑤	
	Alt. Yoke	80-5-4							
	Alt. Yoke	80-2-4							
M5	Rear Cover & Centering Device	83-936						YC-1	
	Alt. Rear Cover & Centering Device	83-1034							
	Yoke Clamp	22-2-3						CL-1	
	Alt. Yoke Clamp	22-118-3							
T3	Horiz. Output	80-3-3F							
	Alt. Horiz. Output	80-3-3							

① Cut and tape blanking lead .
② Drill new mounting hole(s).
③ Includes yoke plug, rear cover and centering device.
④ Use original rear cover and centering device, and width sleeve .
⑤ Use original yoke damping network, if necessary.
⑥ Connect yoke terminal #3 to yoke plug pin #7, yoke terminal #7 to yoke plug pin #2, jumper yoke terminals #1 and #6, and connect to yoke plug pin #5, yoke terminal #4 to yoke plug pin #3.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Silvertone PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6200Ω	3-4Ω	80-21-1	Z1110	A-3026		A-3877 ①	24848	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA Silvertone PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	33-288-4 ①	4A07	① Used in Models 8100BE, 8100GR, 8100EB, FG, 8108EB, FG, 9110, 9111
	4"	PM	3-4Ω	33-324-4 ②		② Used in Models 8102AQ, CL, YL, 8106
	4"	PM	3-4Ω	33-387-4 ②		③ Used in Models 8102AQ, BL, CL, GY, 9103AQ, BL, CL, GY
	5"	PM	3-4Ω	33-258-4 ③		④ Used in Models 9150, 9151

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	Silvertone PART No.	REPLACEMENT DATA
K1	Audio & Sync Circuit	10000mmf, 220Ω, 3300Ω, 8200Ω, 470K	13-21-5	
K2	Audio Circuit	220mmf, 4700mmf, 10000mmf, 680Ω, 560K, 680K	13-22-5	
K3	Sync Sep. Coupling	150mmf, 5000mmf, 22K, 270K, 2.2meg	13-9-5	
K4	Vertical Circuit	5000mmf, 5000mmf, 5000mmf, 5000mmf, 15K, 22K, 33K, 47K, 47K, 68K	13-17-5 ①	
K5	Horizontal Circuit	27mmf 10%, 47mmf 10%, 220mmf 10%, 5000mmf, 8000mmf, 9000mmf, 8300Ω, 15K, 18K, 100K, 330K, 470K, 680K	13-16-5	
K6	Cabinet Isolation	1000mmf, 1000VAC, 4.7meg	13-17-5	

① Used on Ch. 528.50180, 200 . All other chassis use Part #13-20-3, components as follows: 2000mmf, 9000mmf, 9000mmf, 9000mmf, 12K, 22K, 22K, 33K, 56K, 56K.

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Silvertone PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	245A	83-829 ①	1236AH ①	1N1007 ②	T300 ①	300 ①	① Selenium Type.
					TV500 ③	M500 ③	② Germanium Type
M2	.245A	83-829 ①	1236AH ①	1N1007 ②	T300 ①	300 ①	③ Silicon Type.
					TV500 ③	M500 ③	

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M3	Tuner	95-130-0	VHF, Ch. 528.50180, 181, 182
	Tuner	95-129-0	VHF, Ch. 528.50230, 221
	Tuner	95-134-0	VHF, Ch. 528.50200, 201, 202
	Tuner	95-157-0	VHF, Ch. 528.50240
	Tuner	96-131-0	UHF-VHF, Includes VHF Tuner (With UHF Provisions) #96-144-0 and UHF Tuner #96-143-0. Ch. 528.50230, 231, 270
	Tuner	96-132-0	UHF-VHF, Includes VHF Tuner (With UHF Provisions) #96-146-0 and UHF Tuner #96-145-0. Ch. 528.50250
M4	Width Sleeve	83-1052	
M5	Centering Device	83-936	Includes Yoke Rear Cover
	Centering Device	83-1034 *	
M6	Circuit Breaker	43-2-2	
	Circuit Breaker	43-1-2 *	
	Magnet	27-66-2	Beam Alignment, Used with some Picture Tubes
	Printed Board	84-4910	Video IF, Sync and Sound, Less Tubes
	Printed Board	84-4778	Video IF, Sync and Sound, Less Tubes, Ch. 528.50270 only
	Printed Board	84-4911	Horiz. and Vert., Less Tubes, Ch. 528.50180, 240, 250, 270
	Printed Board	84-6389	Horiz. and Vert., Less Tubes, Ch. 528.50181, 182, 201, 202, 220, 221, 230, 231

* Alternate Part Number.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

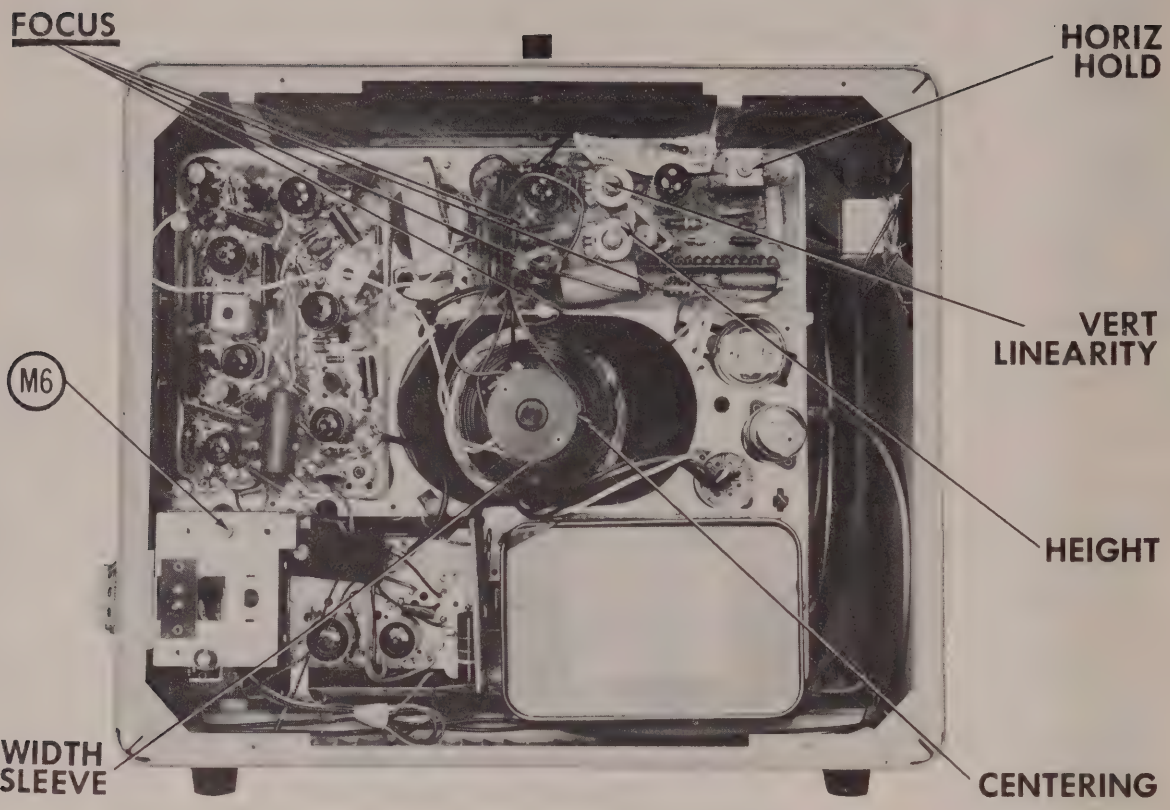
NAME	PART NO.	DESCRIPTION
Safety Glass	48-148-0	Models 9110, 9111, 9150, 9151
Safety Glass	48-137-0	Models 8100GR, 8102CL, 9100EB, FG, 9101EB, FG, 9102AQ, CL, GY, 9103AQ, CL, GY
Bezel	40-6-5	Models 8100GR
Bezel	40-8-5	Model 8102CL
Bezel	40-13-5	Models 9100EB, FG, 9101EB, FG
Bezel	40-14-5	Models 9110, 9111, 9150, 9151
Knob	52-901-0	VHF Channel Selector, Models 8100GR, 9100
Knob	52-890-0	VHF Channel Selector, Model 8102CL
Knob	52-907-0	VHF Channel Selector, Model 9101
Knob	52-897-0	VHF Channel Selector, Models 9110, 9150
Knob	52-1081-0	VHF Channel Selector, Models 8102AQ, CL, GY
Knob	52-896-0	VHF Channel Selector, Models 9111, 9151
Knob	52-889-0	VHF Channel Selector, Models 9103AQ, CL, GY
Knob	52-888-0	UHF Channel Selector, Models 9111, 9151
Knob	52-888-0	UHF Channel Selector, Models 9103AQ, CL, GY
Knob	52-902-0	Fine Tuning, Models 8100GR, 9100
Knob	52-887-0	Fine Tuning, Models 8102CL
Knob	52-1049-0	Fine Tuning, Models 9110, 9150
Knob	52-1082-0	Fine Tuning, Models 9102AQ , CL, GY
Knob	52-905-0	VHF Fine Tuning, Model 9101
Knob	52-868-0	VHF Fine Tuning, Models 9111, 9151
Knob	52-884-0	VHF Fine Tuning, Model 9103AQ, CL, GY
Knob	52-680-0	UHF Fine Tuning, Model 9101
Knob	52-906-0	Dial Indicator, Model 9101
Knob	52-898-0	UHF Channel Indicator, Models 9111, 9151
Knob	52-885-0	UHF Channel Indicator, Models 9103AQ, CL, GY
Knob	52-864-0	On-Off-Volume
Knob	52-861-0	Contrast
Knob	52-863-0	Brightness
Knob	52-862-0	Vert. Hold
Knob	52-1070-0	Control, 4 used
Handle	49-173	Model 8100GR
Handle	49-186	Models 8102CL, 8103AQ, CL, GY, 9103AQ, CL, GY
Handle	49-252	Models 8100EB, FG, 9101EB, FG
Cabinet	42-10-0	Model 8100GR
Cabinet	42-84-0	Models 9100FG, 9101FG
Cabinet	42-105-0	Models 8100EB, 9101EB
Cabinet	42-87-0	Models 9150 , 9151
Cabinet	42-85-0	Models 9110, 9111

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Two Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

SILVERTONE CHASSIS 528.50180, 181, 182, 200, 201, 202, 220, 221, 230, 231, 240, 250, 270

FOLDER 2



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and adjust the Horizontal Hold until the picture synchronizes horizontally. If the picture cannot be synced with the Horizontal Hold, turn the Waveform slug (B1) several turns out of the coil form from its original position. Readjust the Horizontal Hold until the picture synchronizes horizontally.

Connect the Vertical Amplifier of a scope thru a low capacity probe to point ◈. Connect low side to chassis. Retouch the Horizontal Hold to synchronize the picture.

Adjust the Waveform slug (B1) for a waveform similar to Fig. 5 with the sharp peak approximately 10% higher than the broad peak. Keep the picture in sync during this adjustment with the Horizontal Hold. Remove scope connection and retouch Horizontal Hold if necessary to synchronize picture horizontally.

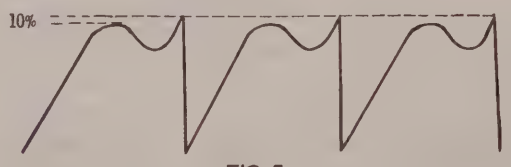
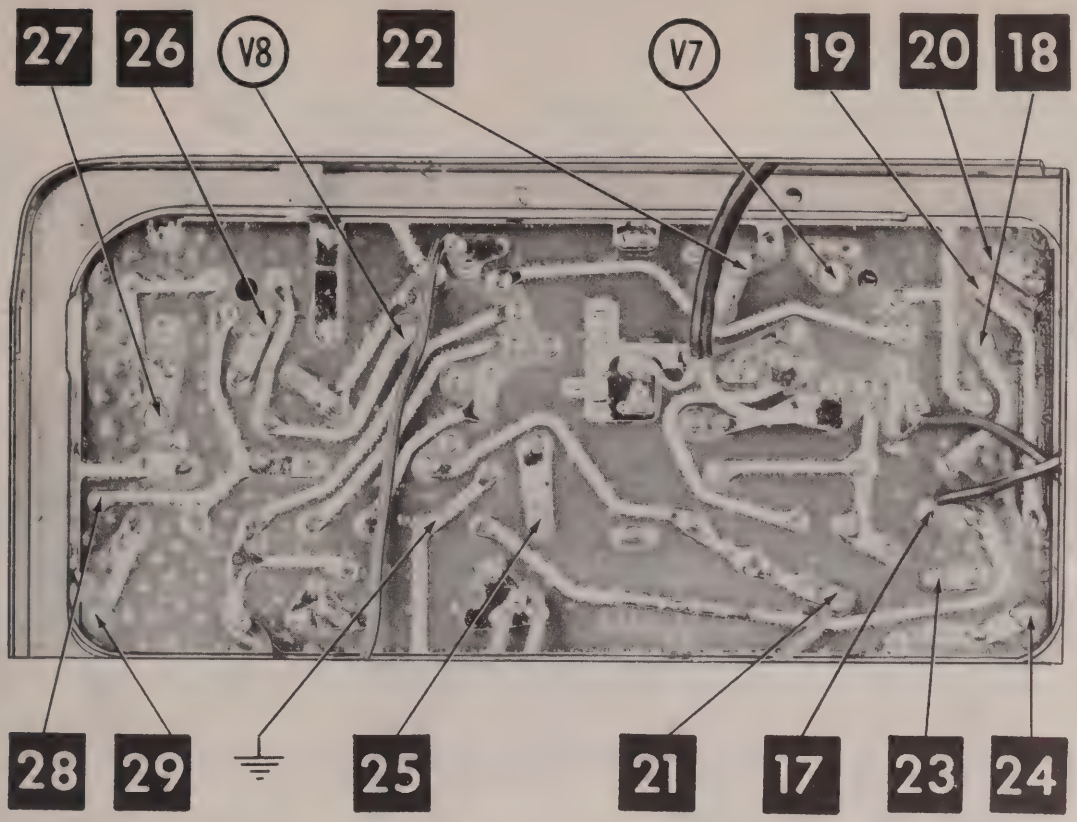


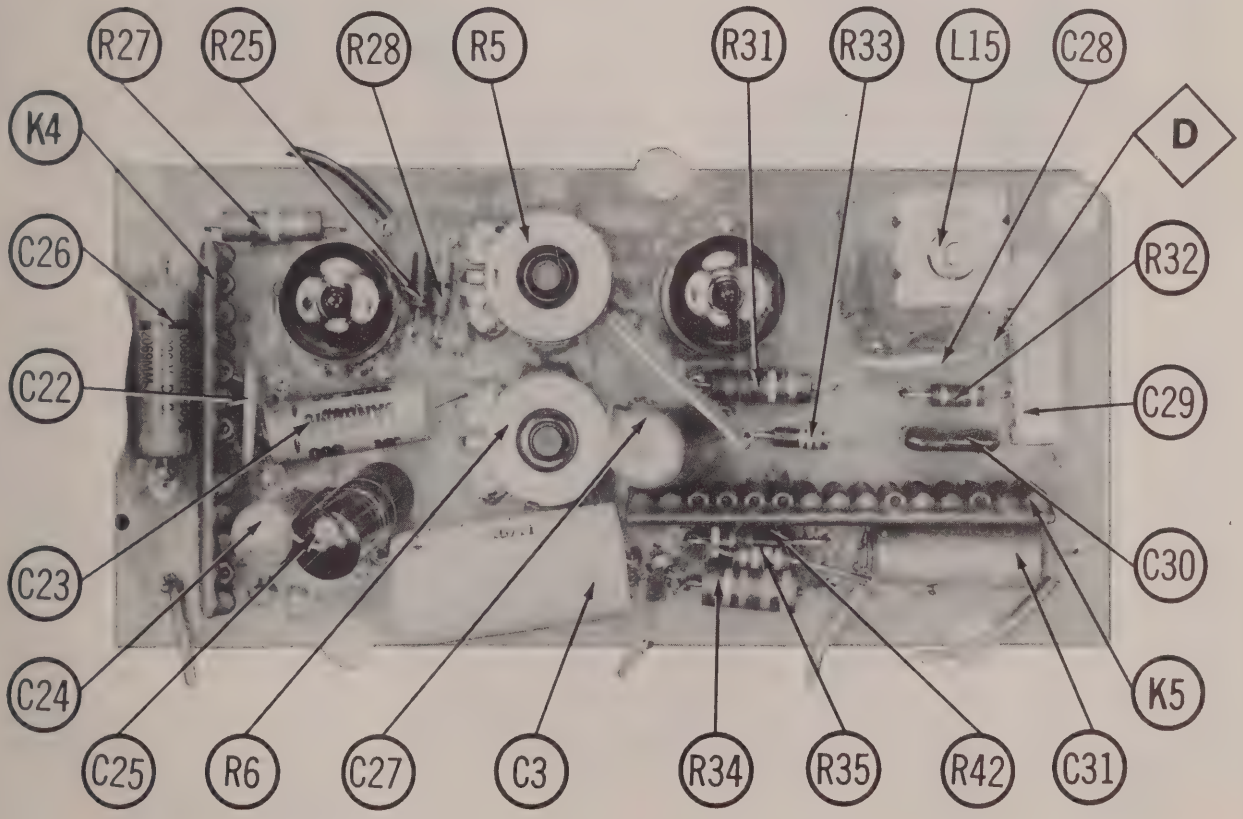
FIG. 5



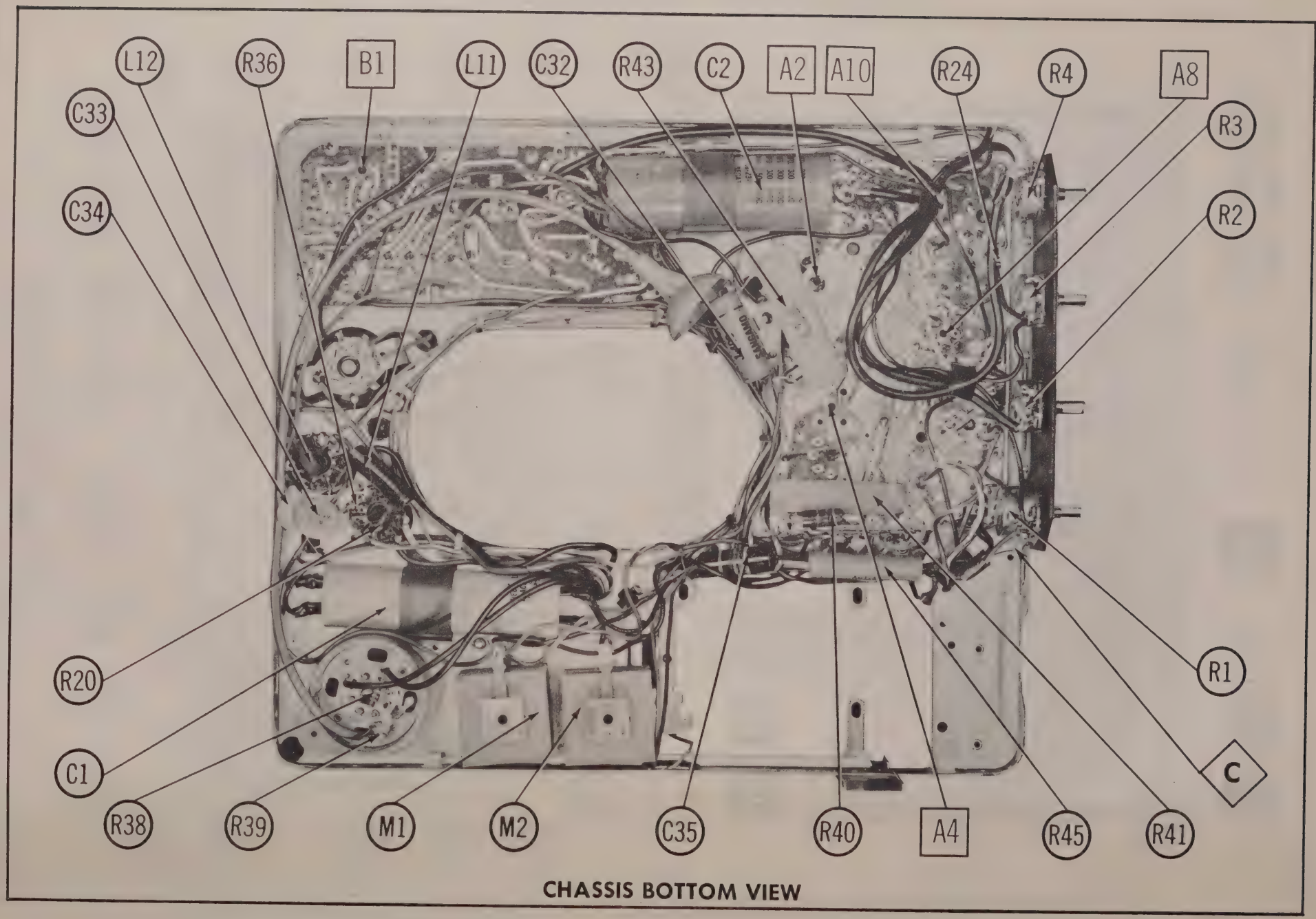
A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

HORIZ & VERT PRINTED BOARD

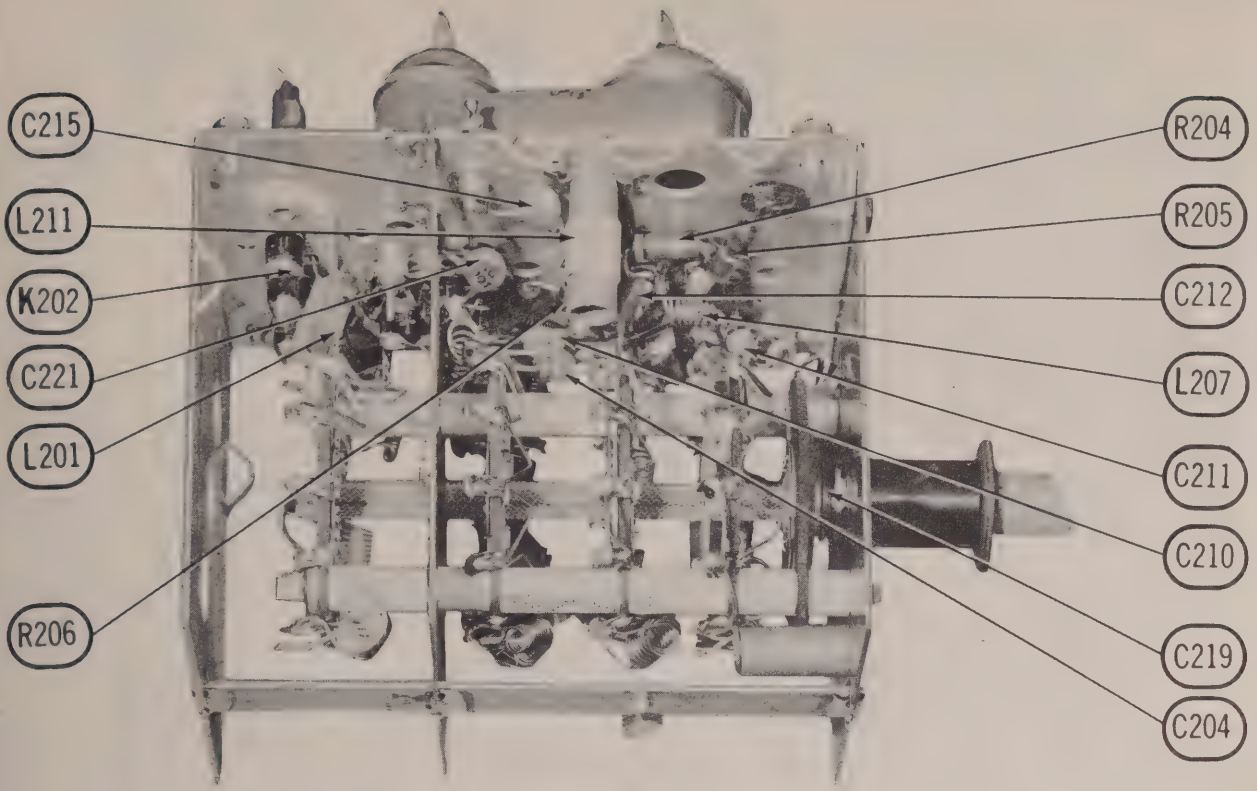
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



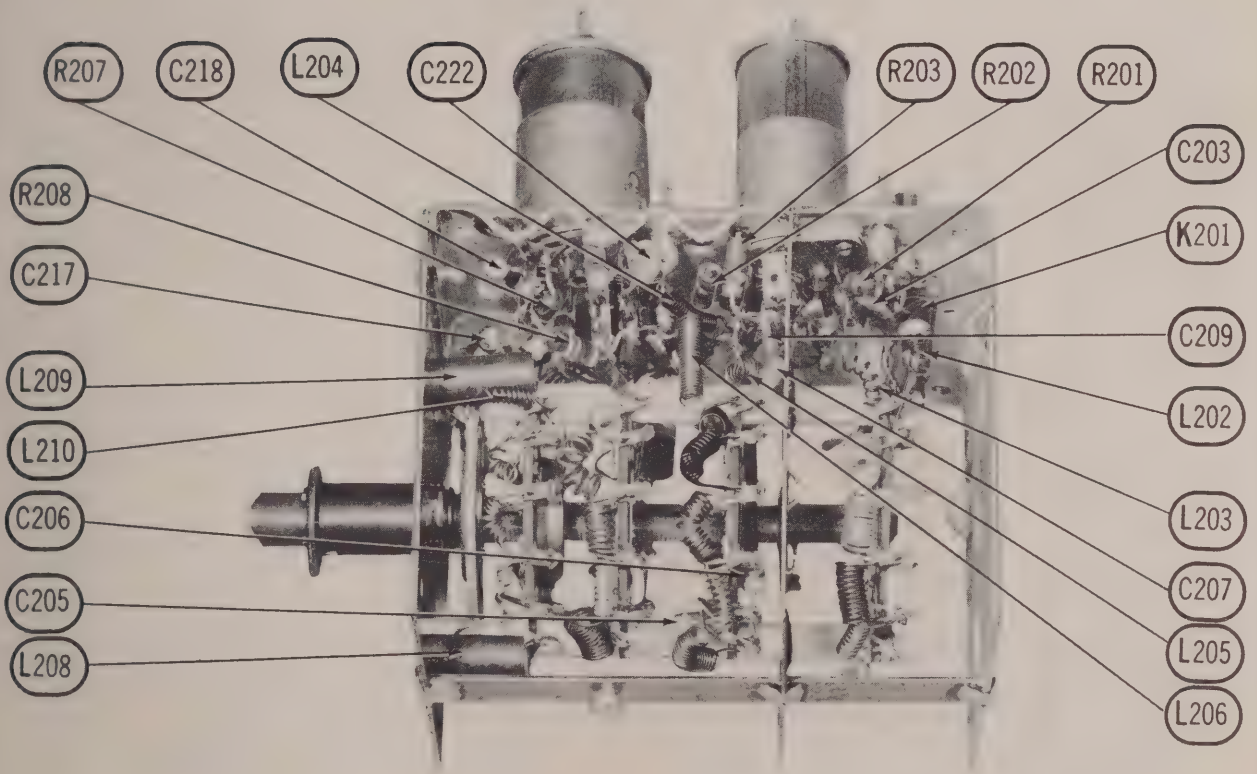
HORIZ & VERT PRINTED BOARD



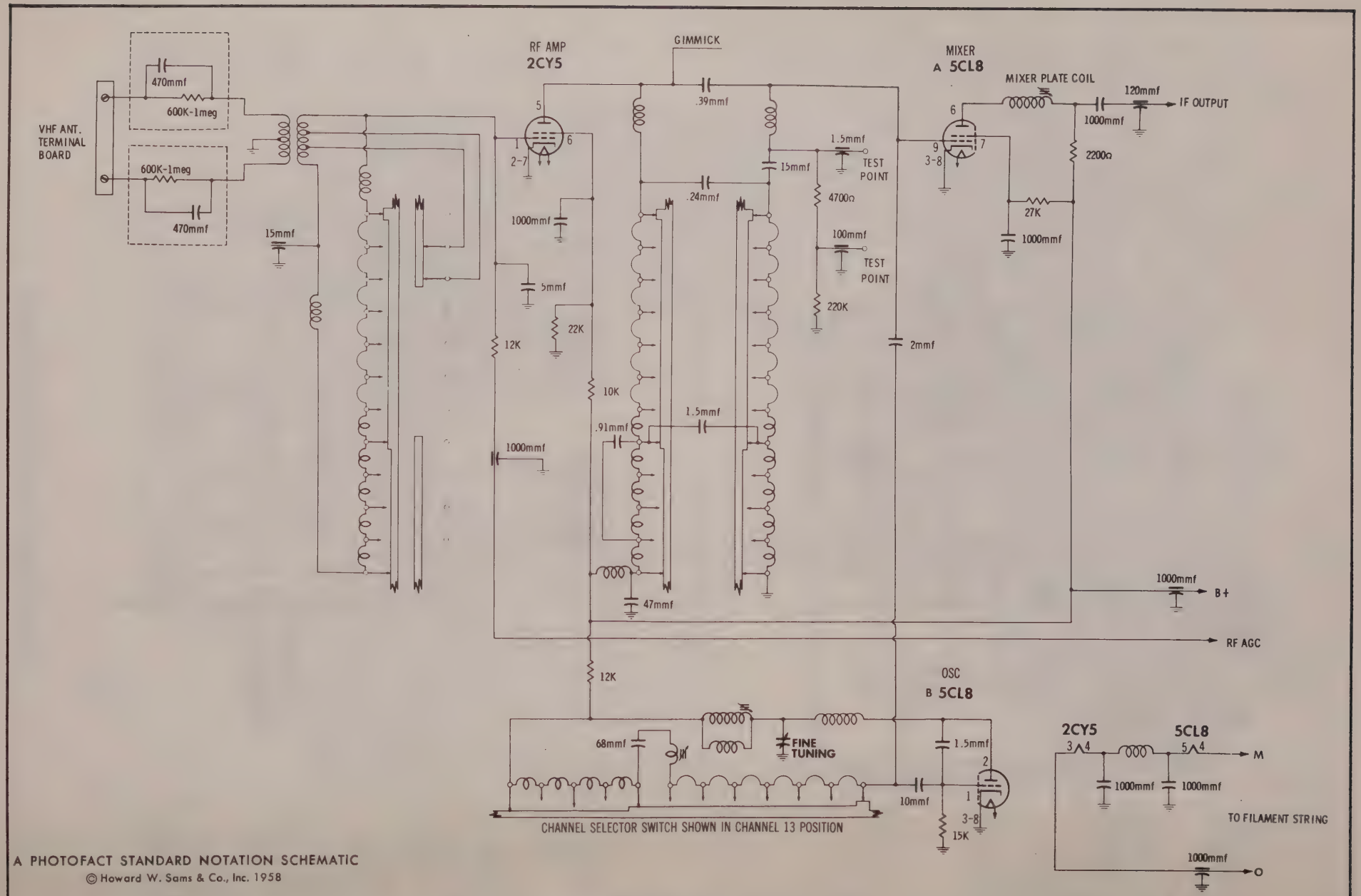
CHASSIS BOTTOM VIEW



TUNER #95-134-0 - LEFT SIDE



TUNER #95-134-0 - RIGHT SIDE



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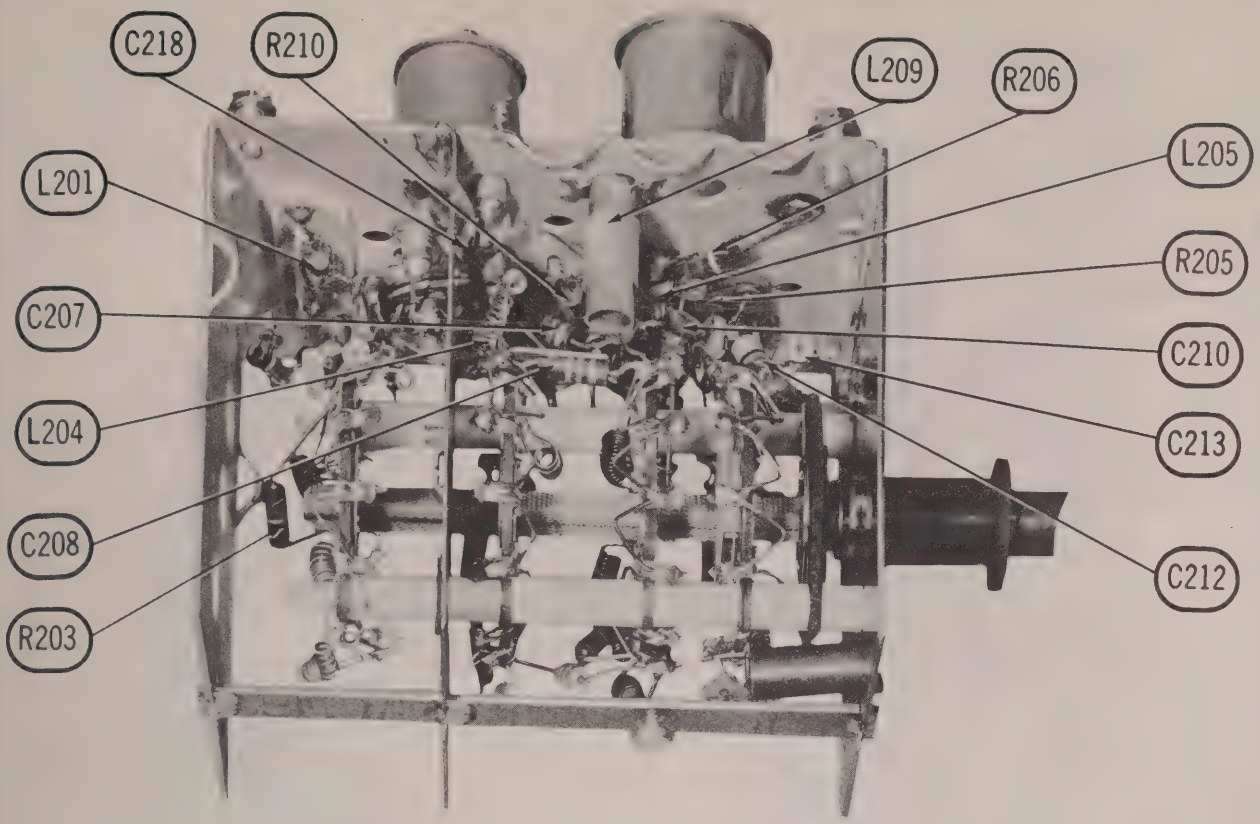
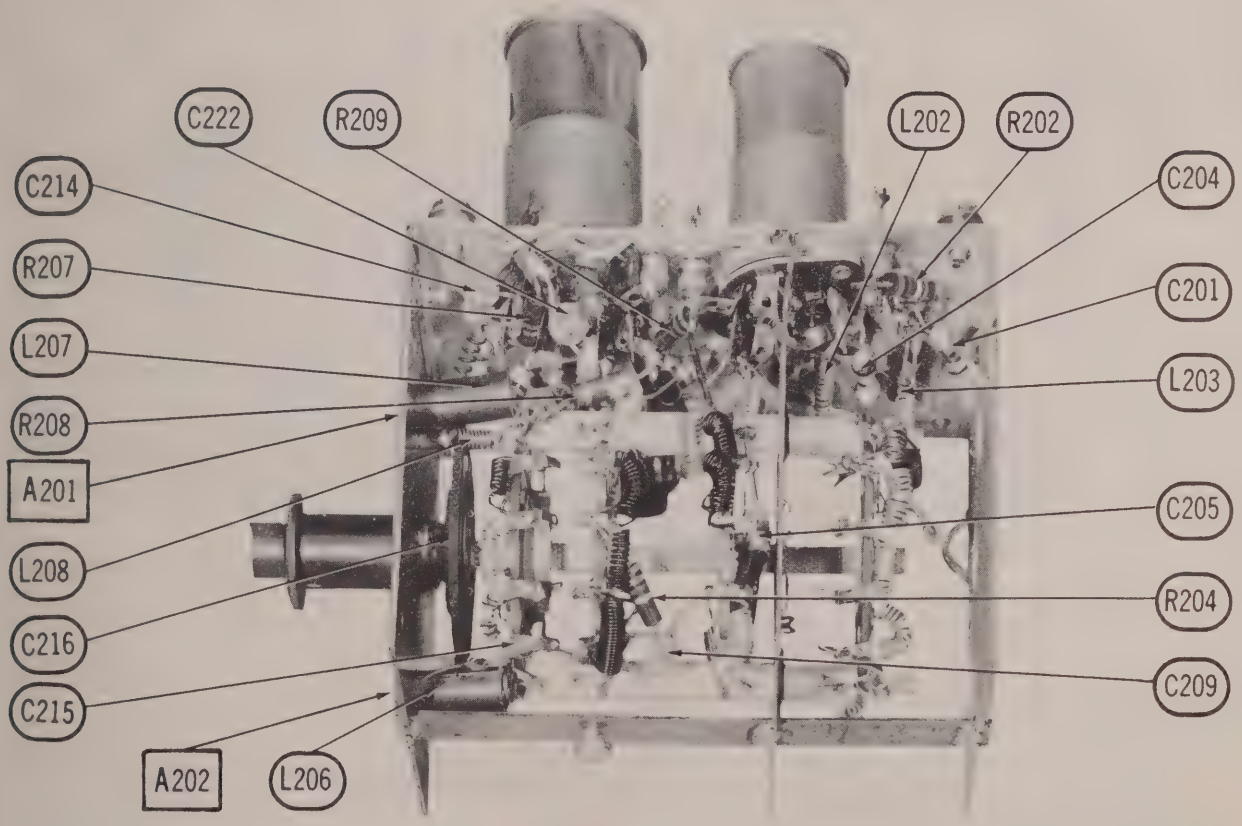
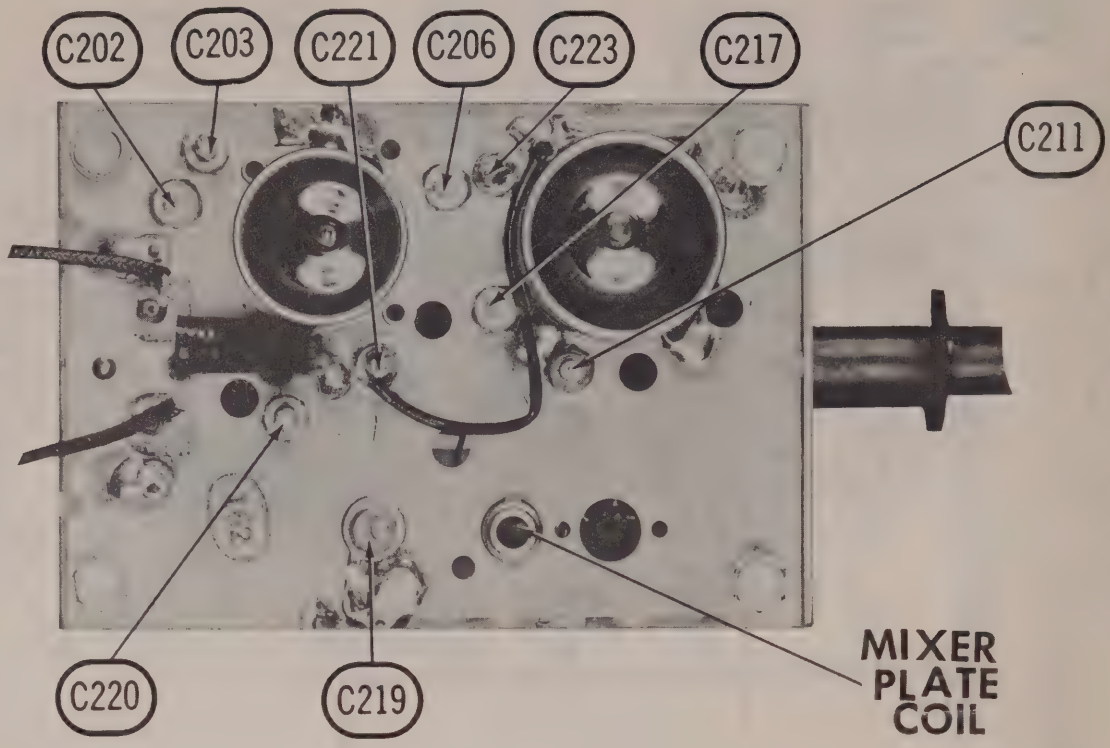
VHF TUNER #95-157-0



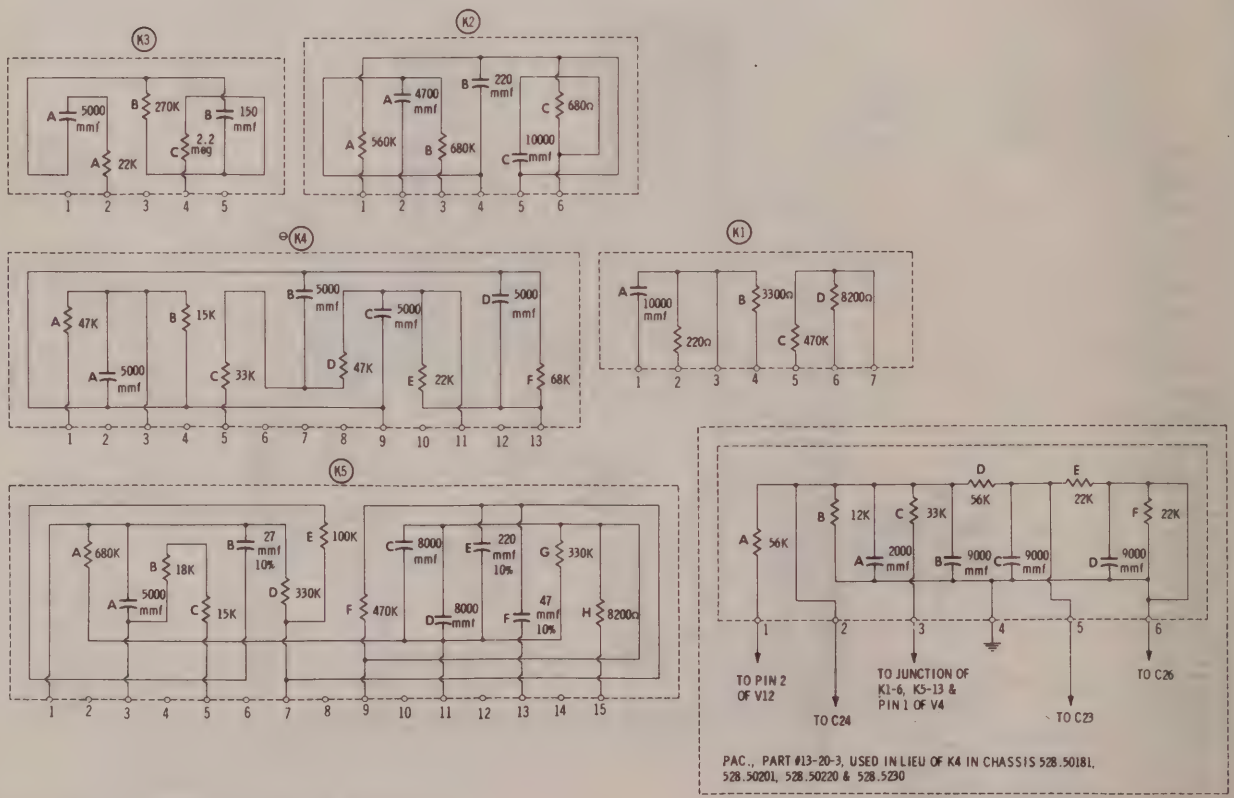
TUNER #95-130-0 - LEFT SIDE



TUNER #95-130-0 - RIGHT SIDE



TUNER #95-130-0 - TOP VIEW



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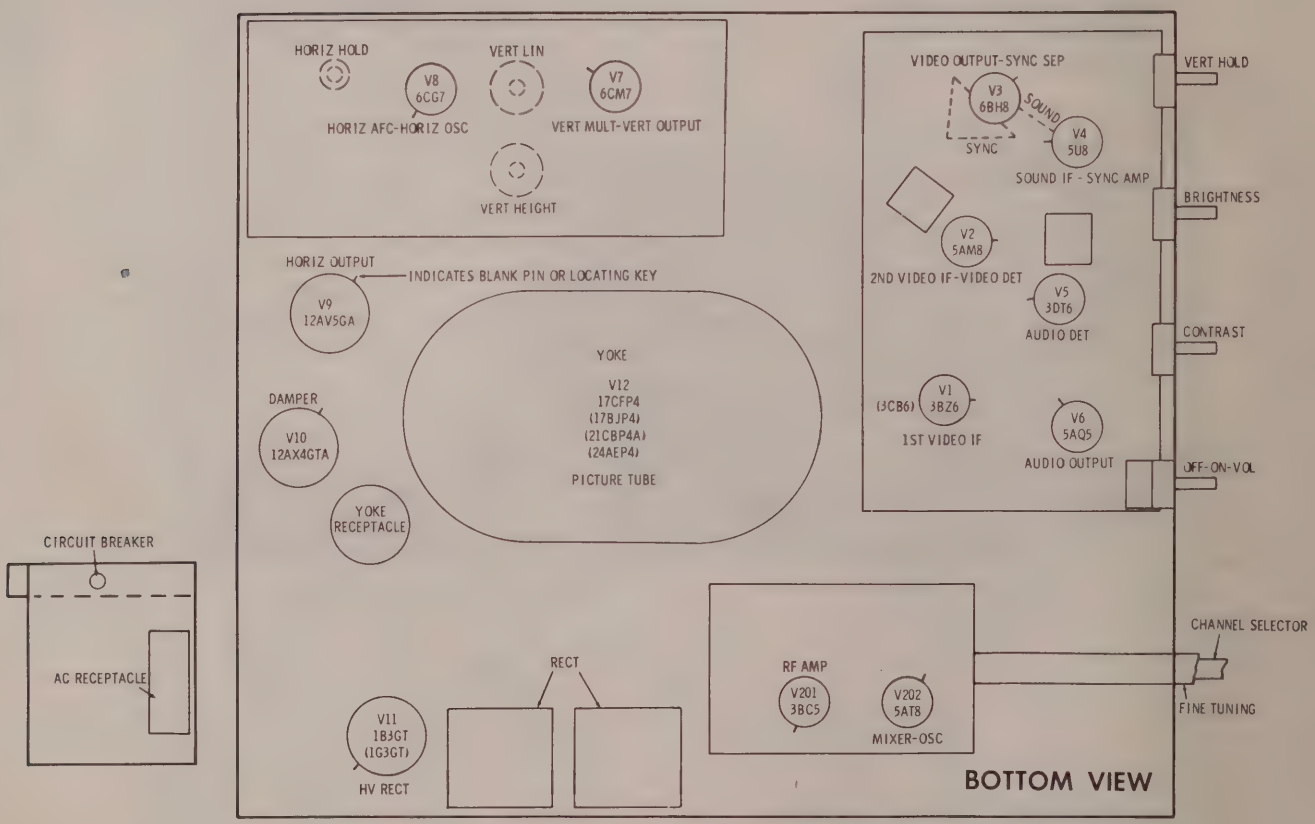
COMPONENT COMBINATION LAYOUT

CHASSIS-TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1meg	47Ω	■ 5Ω	■ 6.5Ω	†1900Ω	†1900Ω	0Ω		
V2	5AM8	220Ω	.1Ω	†2600Ω	■ 6.5Ω	■ 7.5Ω	†2600Ω	0Ω	5600Ω	0Ω
V3	6BH8	0Ω	2.2meg	†470K	■ 9Ω	■7.5Ω	• 80Ω	1meg	†1600Ω	†4000Ω
V4	5U8	†9800Ω	3.6Ω	†110K	■ 5Ω	■ 3.5Ω	†10K	220Ω	3300Ω	†470K
V5	3DT6	5.2Ω	680Ω	■ 3.5Ω	■ 2.5Ω	‡900K	†10K	560K		
V6	5AQ5	0Ω	180Ω	■ 11Ω	■ 10Ω	†910Ω	†560Ω	0Ω		
V7	6CM7	‡2000Ω	NC	0Ω	■ 12Ω	■ 11Ω	• ‡3.5meg	• 570K	2.2meg	• 1900Ω
V8	6CG7	†32K	400K	0Ω	■ 13Ω	■ 12Ω	†470Ω	500K	300K	NC
V9	12AV5GA	400K	■ 16Ω	0Ω	NC	‡53Ω	NC	■ 13Ω	†6800Ω	
V10	12AX4GTA	TP	NC	¶180K	NC	†2.4Ω	NC	■18Ω	■ 16Ω	
V11	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡473Ω
V12	17CFP4	■ 9Ω	62K	Pin 6 †2.4Ω	Pin 10 ‡29Ω	Pin 11 • 200K	Pin 12 ■ 10Ω			
V201	3BC5	1meg	0Ω	■ 0Ω	■1.5Ω	†1600Ω	†1600Ω	0Ω		
V202	5AT8	15K	†7600Ω	0Ω	■ 1.5Ω	■ 2.5Ω	†3800Ω	†2000Ω	0Ω	235K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM JUNCTION OF C1A AND C1B.
† MEASURED FROM 225V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT* Folder

with CIRCUITRACE*

WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

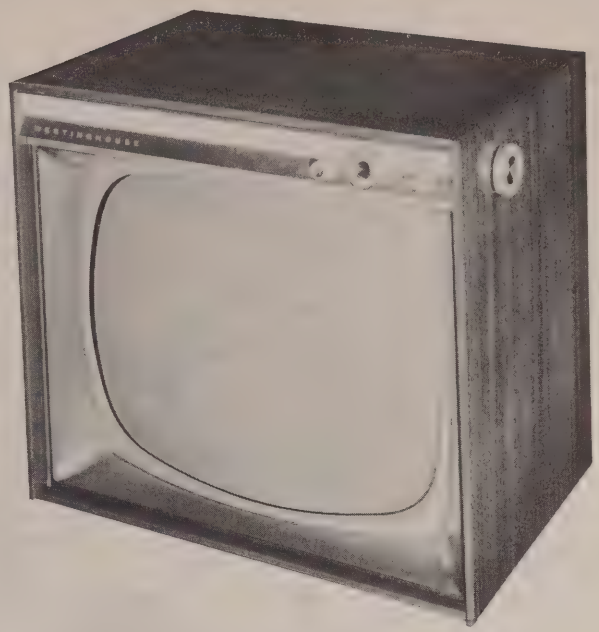
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 3 push-on type knobs from the front and 2 from the side.
2. Remove 9 metal screws holding the rear cover. Remove the rear cover.
3. Remove 1 metal screw holding the antenna terminal board.
4. Remove 2 metal screws inside the cabinet holding the front escutcheon. Remove 3 metal screws from the front holding the escutcheon and remove the escutcheon.
5. Remove 4 push-on type knobs now accessible.
6. Remove 4 metal screws from the front holding the control bracket.
7. Remove the speaker leads.
8. Remove 7 chassis bolts from the bottom.
9. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.



MODEL H21TU206A (CH. V-2364-4)

TRADE NAME	Westinghouse	MODELS	CHASSIS
		H-21K210, H-21K211, H-21T206, H-21T207	V-2364-1
		H-21KU210, H-21KU211, H-21TU206, H-21TU207	V-2364-2
		H-21K210A, H-21K211A, H-21T206A, H-21T207A	V-2364-3
		H-21KU210A, H-21KU211A, H-21TU206A, H-21TU207A	V-2364-4
MANUFACTURER	Westinghouse Electric Corp., Television & Radio Div., Metuchen, N.J.		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	105-120 Volts AC, 60 Cycle	RATING 170 Watts, 1.64 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 metal screws from the trim strip at the top edge of the safety glass. Tilt glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
No provision is made to vary the focus on this receiver.

B. Sync
The Sync Control is preset at the factory for operation in strong signal areas. Therefore, it may be necessary to readjust to suit local conditions. The control operates over a wide range of signal and noise levels. To adjust for weak or noisy areas tune in station and adjust the Horizontal Hold and Vertical Hold Controls for best picture stability. Turn the Sync Control (R7A) counterclockwise until best sync stability is obtained. DO NOT turn control any further counterclockwise than necessary, or sync instability may occur in noise free signals. Check adjustment by switching from channel to channel. The picture should sync in on each station.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Quieting Control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSE DEVICE

A 7.5Ω fusible resistor (R87) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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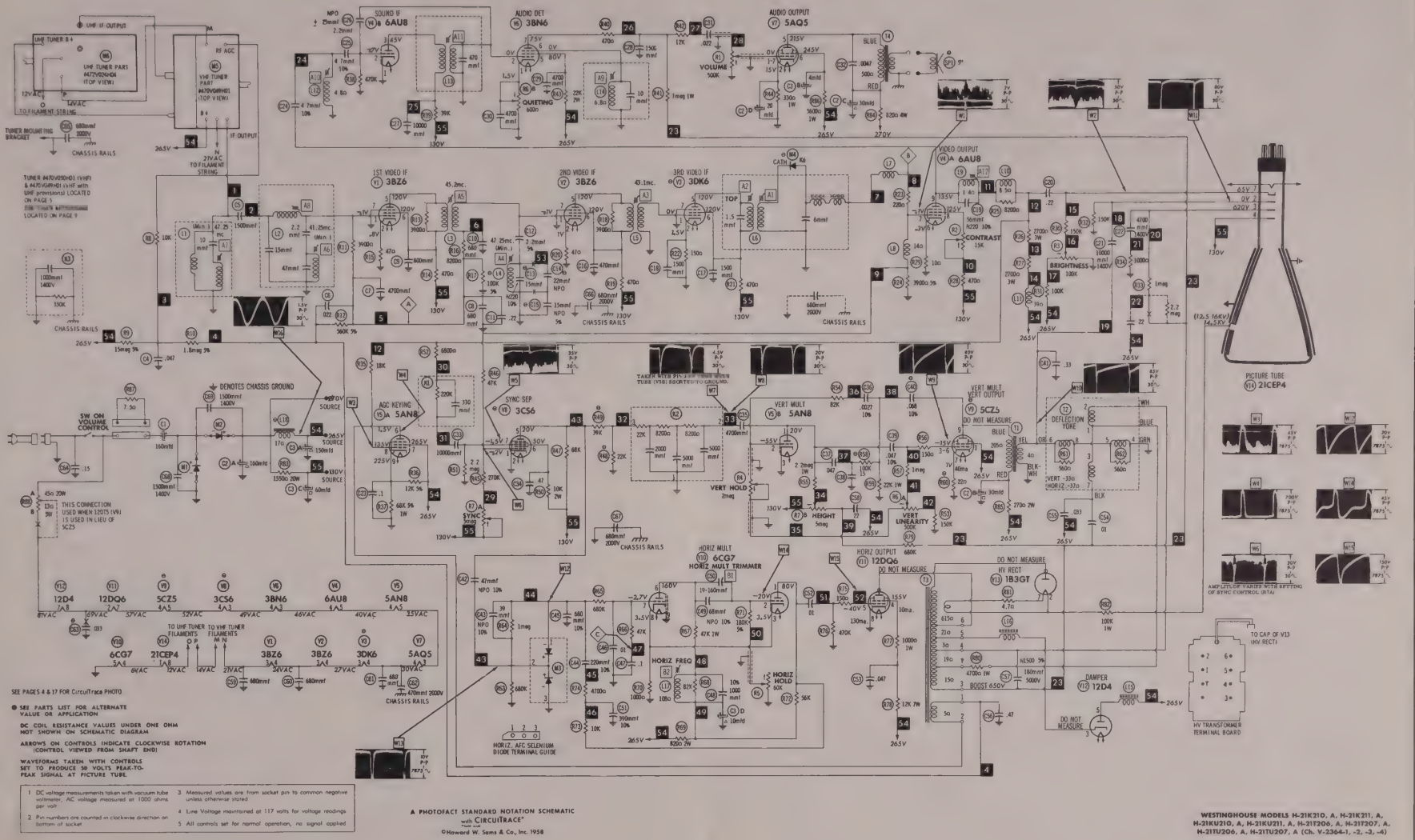
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H650

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

SET 411 FOLDER 3


SOUND IF V4 6AU8
AUDIO DET V6 3BN6
AUDIO OUTPUT V7 5AQ5
VOLUME 500K
QUIETING
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3DK6
VIDEO OUTPUT V4A 6AU8
CONTRAST 15K
BRIGHTNESS 100K
AGC KEYING V5A 5AN8
SYNC SEP V6 3CS6
SYNC 500K
VERT MULT V5B 5AN8
VERT HOLD 2meg
HEIGHT 5meg
VERT LINEARITY 500K
VERT MULT VERT OUTPUT V9 5CZ5
DO NOT MEASURE
DEFLECTION YOKE
PICTURE TUBE V14 21CEP4
HORIZ MULT V10 6CG7
HORIZ MULT TRIMMER
HORIZ FREQ
HORIZ HOLD 60K
HORIZ OUTPUT V11 12DQ6
HV RECT V13 1B3GT
BOOST 650V
DAMPER V12 12D4
HV TRANSFORMER TERMINAL BOARD
TO CAP OF V13 (HV RECT)
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
THIS CONNECTION USED WHEN 12QT5 (V9) IS USED IN LIEU OF 5CZ5
12D4 12DQ6 5CZ5 3CS6 3BN6 6AU8 5AN8
6CG7 21CEP4 3BZ6 3BZ6 3DK6 5AQ5
TO UHF TUNER FILAMENTS
TO VHF TUNER FILAMENTS
CHASSIS RAILS
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
AMPLITUDE OF VARIES WITH SETTING OF SYNC CONTROL (RTA)

SEE PAGES 4 & 17 FOR CircuiTrace PHOTO

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise stated

4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

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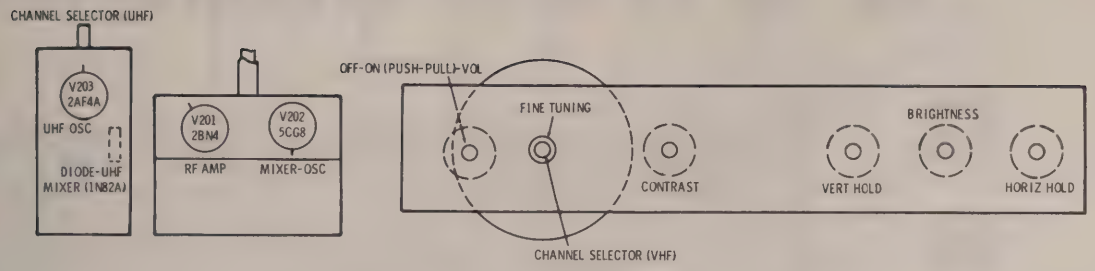
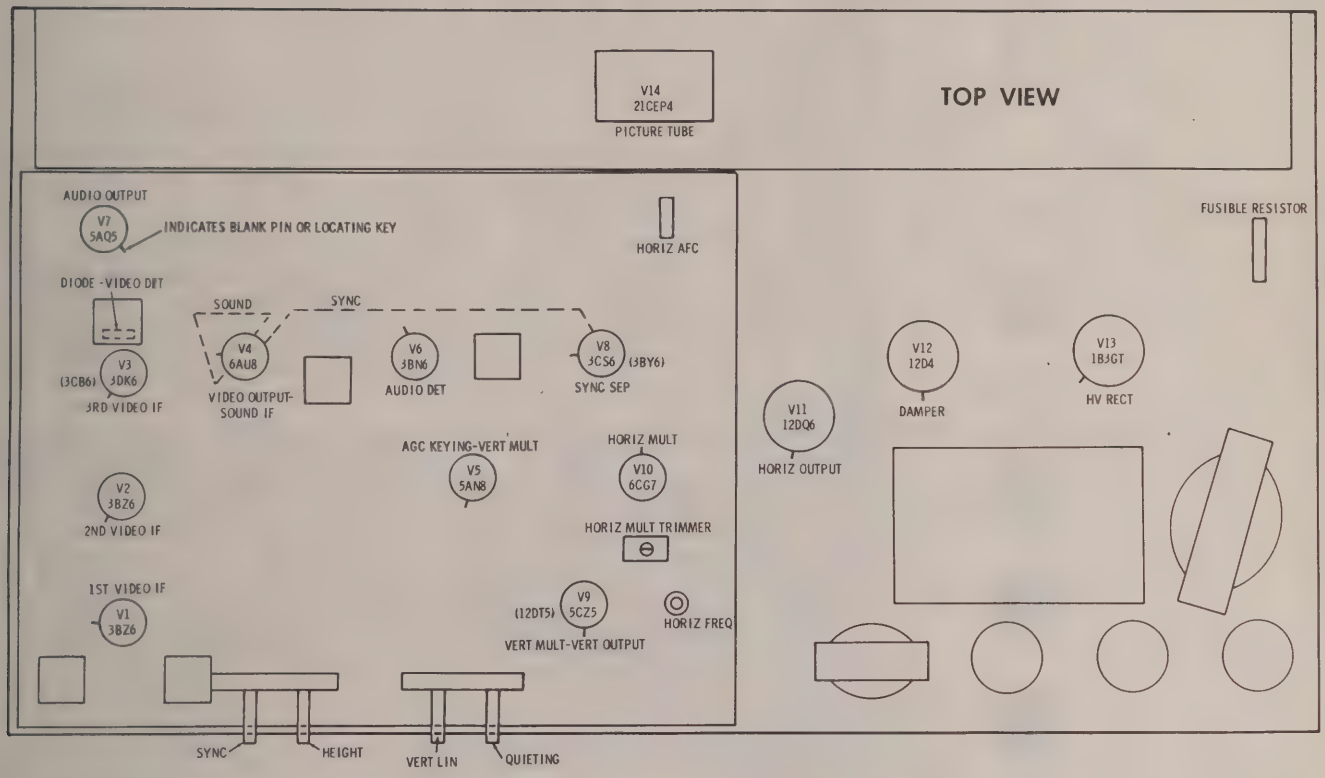
WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

TUBE PLACEMENT CHART





WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

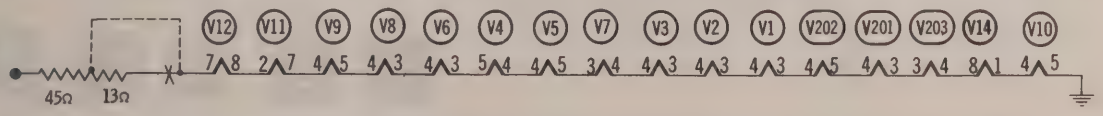
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (R87), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound Rectifier (M3), V10, V11, V12, V13, V14
No vertical deflection V5, V9
Poor vert. linearity or foldover V5, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, M1, M2
Vert. off freq. V5, V9
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M4), V4
No pic, no sound, has snow V201, V202, V1 (V203 UHF only)
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, M3
No vert. or horiz. sync V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 3

WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4)

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

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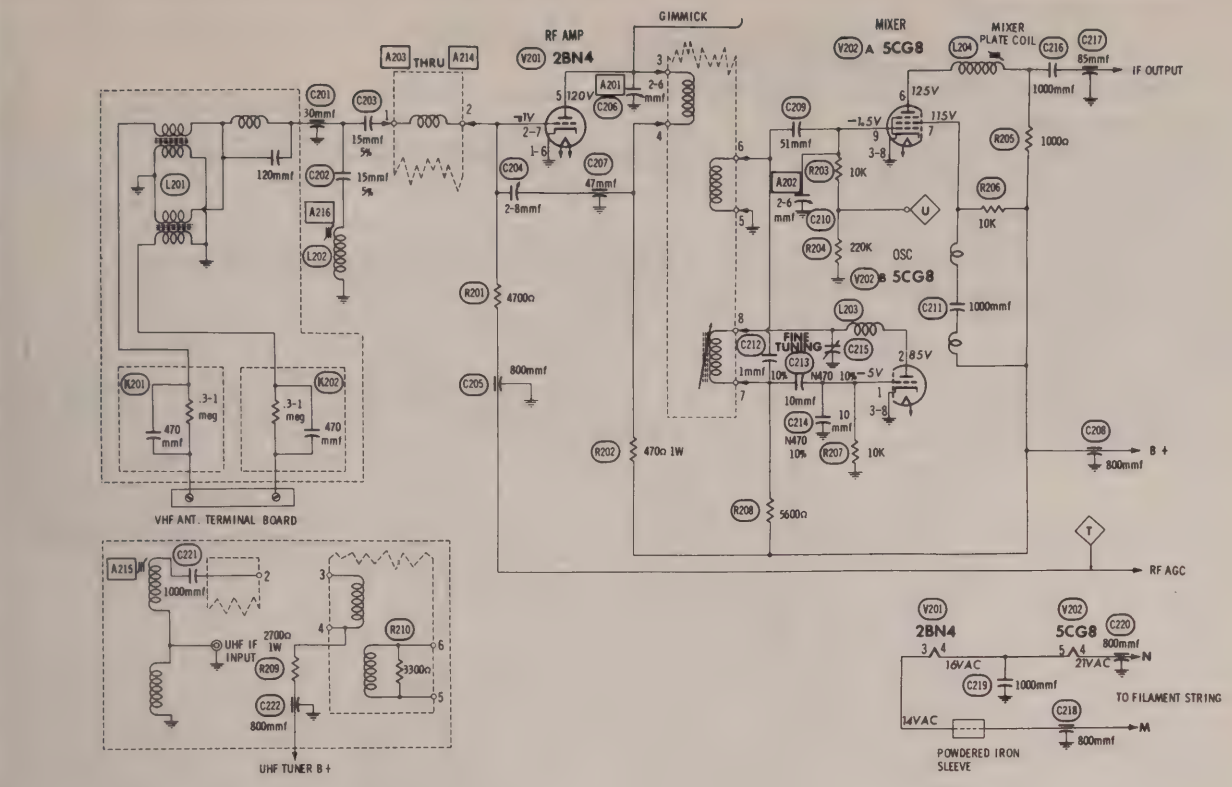
FOLDER 3



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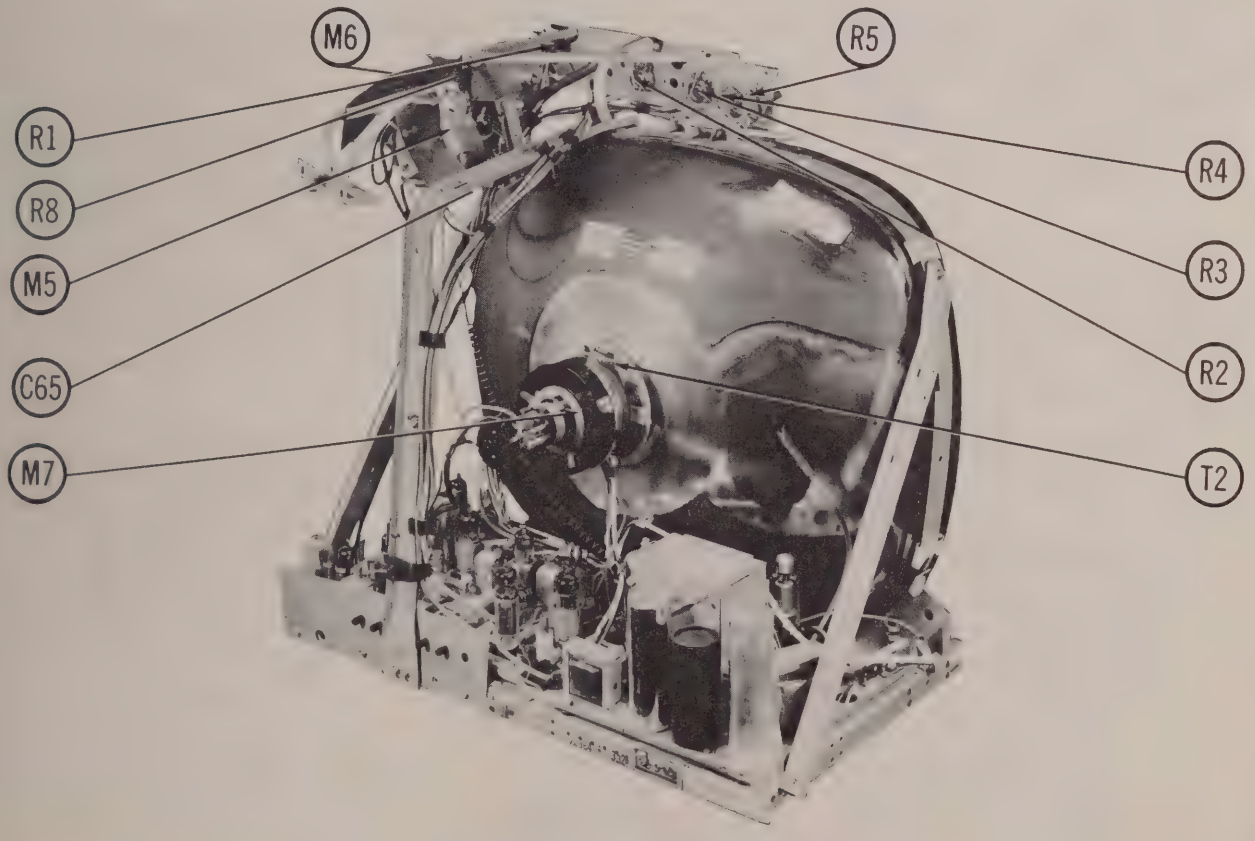
VHF TUNER #470V050H01, VHF W/UHF PROVISION #470V049H01



CHASSIS - REAR VIEW

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (V). Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 202.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A203	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns. Coils are accessible thru rectangular hole on left side of tuner rear cover when viewed from rear.
			207MC	205.25MC 209.75MC	12		A204	
			201MC	199.25MC 203.75MC	11		A205	
			195MC	193.25MC 197.75MC	10		A206	
			189MC	187.25MC 191.75MC	9		A207	
			183MC	181.25MC 185.75MC	8		A208	
			177MC	175.25MC 179.75MC	7		A209	
			85MC	83.25MC 87.75MC	6		A210	
			79MC	77.25MC 81.75MC	5		A211	
			69MC	67.25MC 71.75MC	4		A212	
			63MC	61.25MC 65.75MC	3		A213	
			57MC	55.25MC 59.75MC	2		A214	

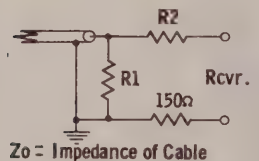
UHF TUNER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 201	Across UHF antenna terminals thru matching network (Fig. 201).	605MC	603.25MC 607.75MC	36	Vert. Amp. thru 10K across Video Detector load.	A215	Adjust sweep generator output to obtain 2 volts peak to peak on scope. Adjust A215 for response similar to Fig. 203. Check response at low and high end of UHF band. The response should be within limits shown in Fig. 203.

44MC TRAP

The antenna trap adjustment (A216) is normally set at the factory at 44MC. However, A216 may be adjusted to attenuate any interference between 40MC and 46MC.



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

FIG. 202

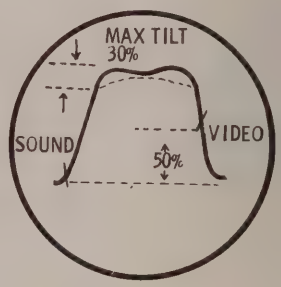


FIG. 203

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Detune the Mixer Plate Coil by turning slug in either direction several turns.
Connect a 470mmf capacitor across the input leads of the scope and VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 3rd. Video IF Tube (V3). Low side to chassis	44MC (10MC Swp)	43.9MC	Any non-interfering channel	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis. (Calibrated 2 volts peak to peak) (Across Video Det. load)	A1, A2	Adjust A1 for maximum amplitude of response. Adjust A2 to center marker.
2.	"	High side to point Ⓒ. Low side to chassis.	Not used	43.1MC (Unmod)	"	USE VTVM. DC probe thru 47K to point Ⓑ. Common to chassis. (Across Video Det. load)	A3	Adjust for maximum deflection.
3.	"	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	45.2MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	44MC (10MC Swp)	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis. (Calibrated 2 volts peak to peak) (Across Video Det. load)		Check for response similar to Fig. 1. If necessary, retouch A3 and A5 for desired response.
6.	"	High side to Mixer Grid Test Point. Low side to chassis.	Not used	41.25MC	12 or 13	USE VTVM. DC probe thru 47K to point Ⓑ. Common to chassis. (Across Video Det. load)	A6	Adjust for MINIMUM deflection.
7.	"	"	"	47.25MC	"	"	A7	"
8.	Fig. 2	Across antenna terminals thru antenna matching network (Fig. 2).	"	59.75MC	2	"	Fine Tuning	Connect bias. Connect the negative lead of a 2.5 volt bias supply to tuner AGC point. Adjust for MINIMUM deflection.
9.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	"	"	A8, & Mixer Plate	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A8 for maximum gain and Mixer Plate Coil for correct tilt.

SOUND IF ALIGNMENT

10. Connect a high impedance AC voltmeter or scope across the Volume Control to act as an indicator.
11. Set the Quieting Control (R6B) to the center of its range.
12. Apply a 4.5MC FM signal (15KC Swp) to point Ⓑ. Low side to chassis.
13. Using a strong signal adjust A9 for maximum indication.
14. Reduce the signal strength to the lowest point that will provide an indication. Adjust A10 and A11 for maximum deflection.
15. Replace the FM signal with a 4.5MC AM signal (30% Mod.), and adjust the generator for a strong output.
16. Adjust the Quieting Control for MINIMUM indication or output.

ALTERNATE SOUND IF ALIGNMENT USING AIR SIGNAL

10. Tune the receiver to TV station and connect an adjustable attenuator in series with the antenna lead-in so that the signal strength may be varied from weak to strong.
11. Set the Quieting Control (R6B) to the center of its range.
12. Apply a strong signal to the receiver and adjust A9 for maximum sound. If peaks occur at two widely separated points use the one which occurs with the slug farthest counterclockwise. If two peaks occur within a narrow range of adjustment, sufficient signal is not being used and should be increased, or the Quieting Control is not set at the correct position.
13. Reduce the signal until a hiss is heard in the sound. Adjust A10 and A11 for maximum sound. If more than two peaks occur use the one with the slug most counterclockwise.
14. Using a strong signal, retouch A9 for maximum sound.
15. Still using a strong signal, readjust the Quieting Control for MINIMUM hum or buzz. (Normal setting for this control is near mid-range).

4.5MC TRAP ALIGNMENT

17. Tune in a station and adjust the fine tuning until a 4.5MC beat pattern is visible in the picture. Adjust A12 for MINIMUM beat pattern in the picture.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

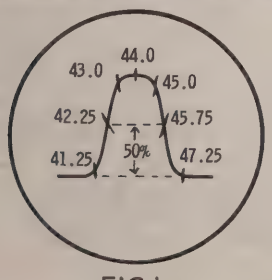
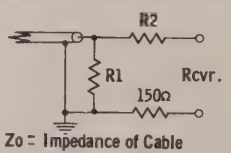


FIG.1



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG.2

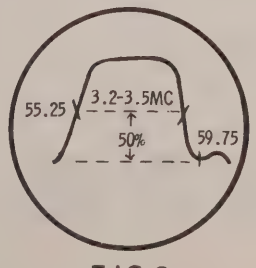
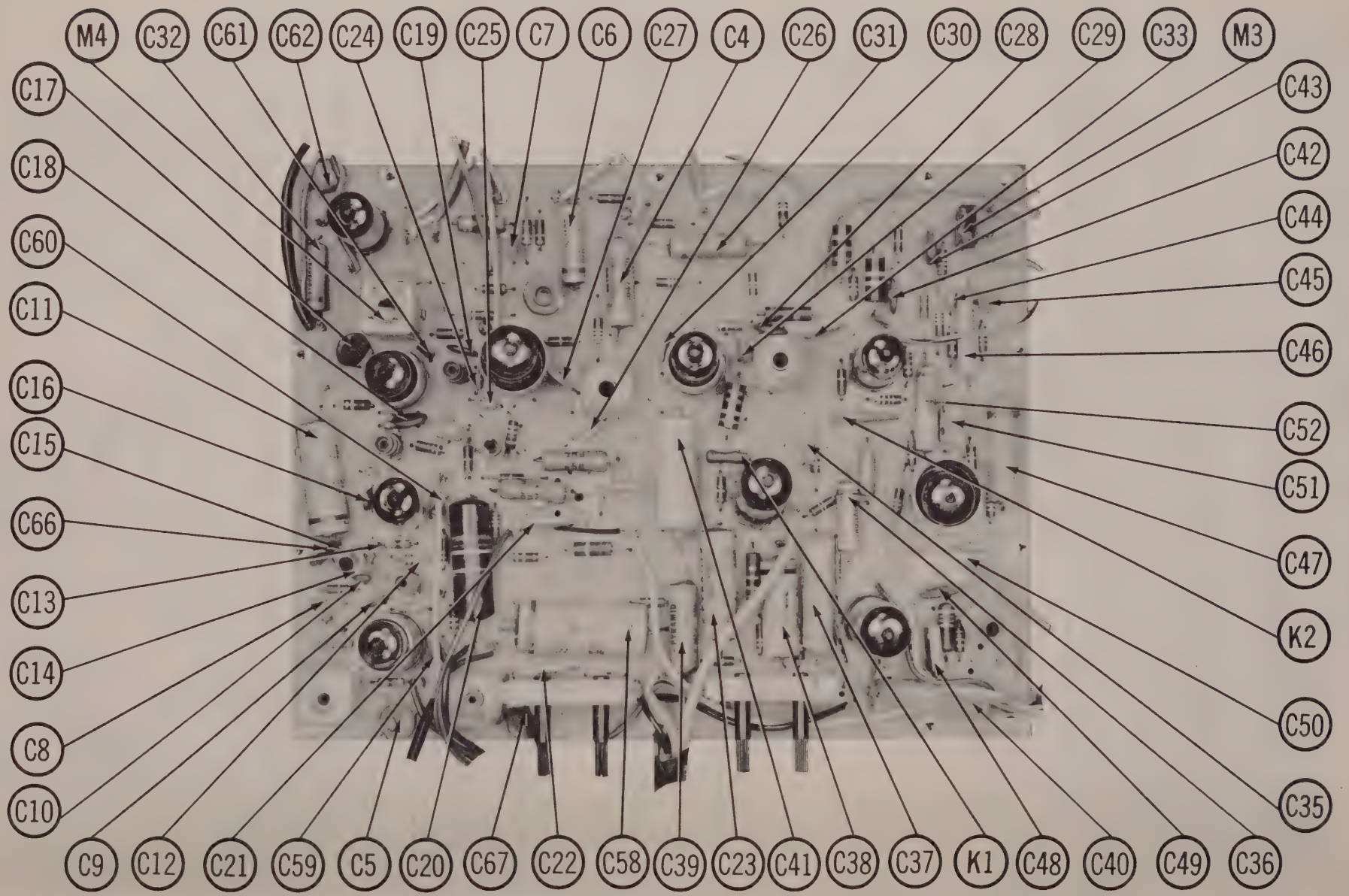
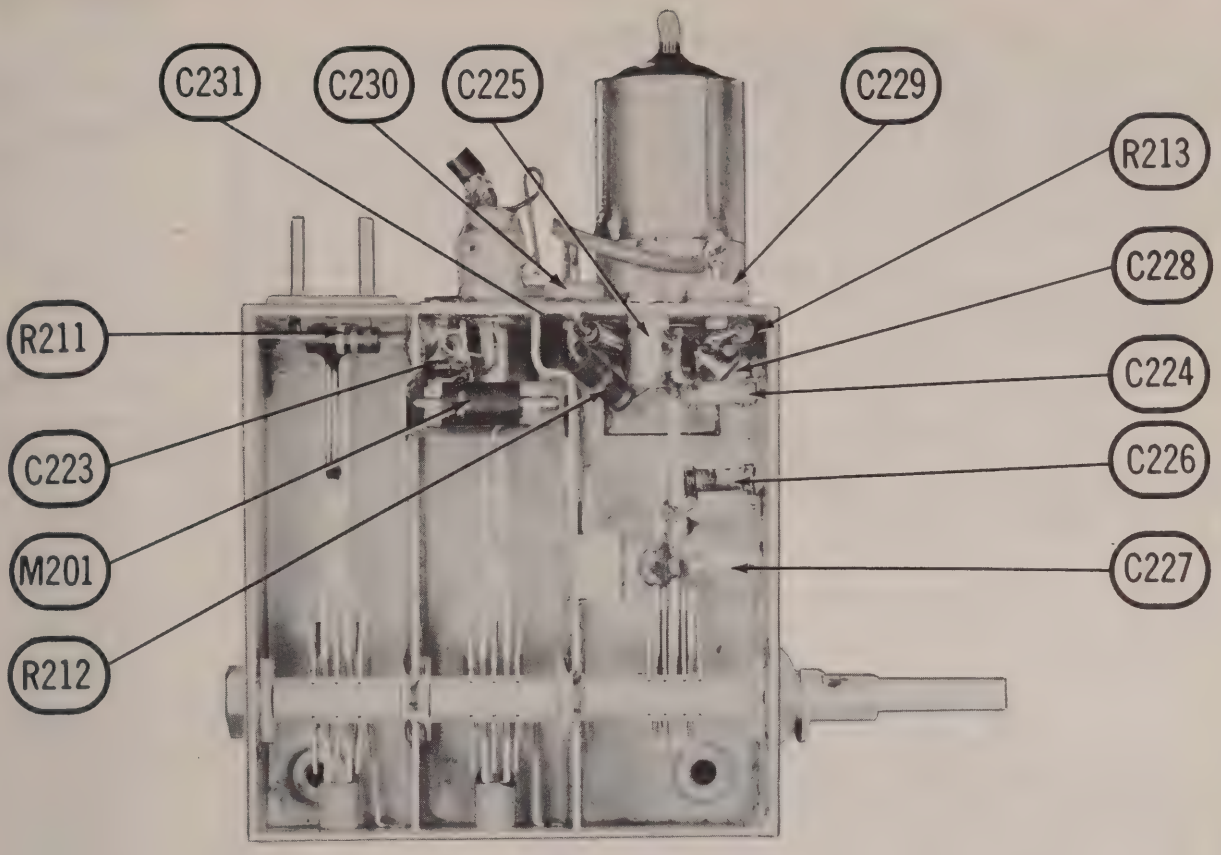


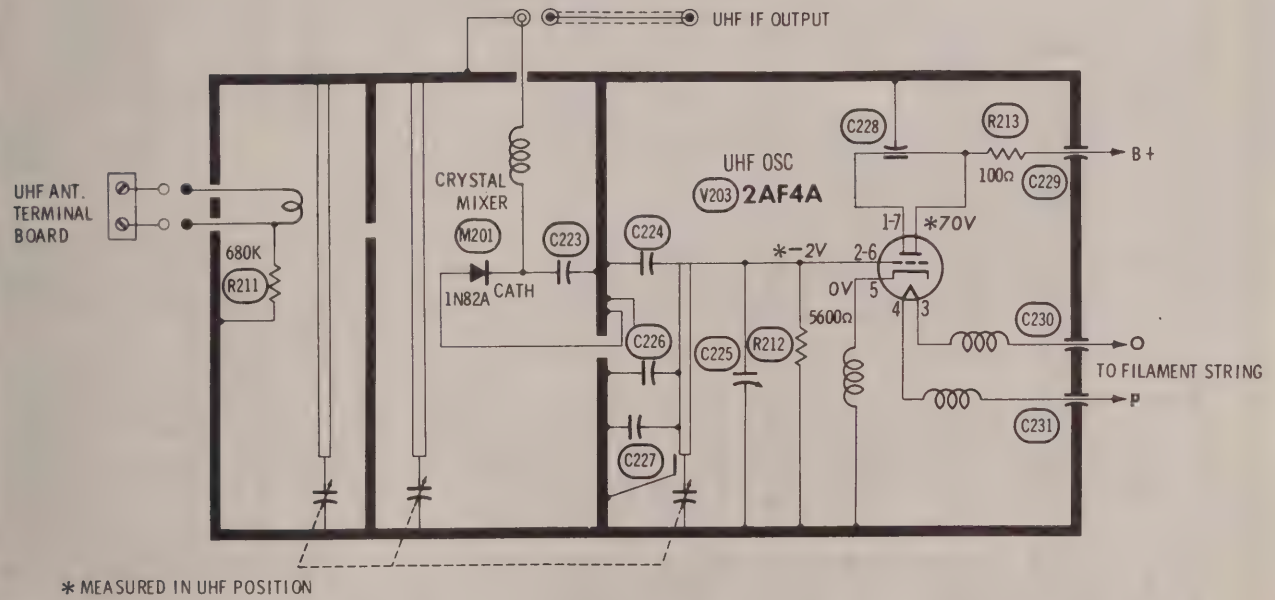
FIG.3



CAPACITOR IDENTIFICATION



UHF TUNER - SIDE VIEW



* MEASURED IN UHF POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER #472V024H04

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd. Video IF Amp.	3BZ6	
V3	3rd. Video IF Amp	3DK6	3CB6 *
V4	Video Output-Sound IF Amp.	6AU8	
V5	AGC Keying-Vert. Mult.	5AN8	
V6	Audio Det	3BN6	
V7	Audio Output	5AQ5	
V8	Sync Sep.	3CS6	3BY6 *
V9	Vert. Mult.-Vert. Output	5CZ5	12DT5 ①
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	12DQ6	
V12	Damper	12D4	
V13	HV Rect.	1B3GT	

* Alternate. ① Used in Ch. V-2364-1, -2.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: Westinghouse Part No	GENERAL ELECTRIC Part No	RCA Part No	SYLVANIA Part No	NOTES
V14		21CEP4	21CEP4 ①	21CEP4 ②	① "Silverama" ③ ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: Westinghouse Part No	AEROVOX Part No	CORNELL-DUBILIER Part No	MALLORY Part No	PYRAMID Part No	SANGAMO Part No	SPRAGUE Part No.	NOTES
C1	160	200	218V02IH01	AFHI-31-75	XA0256	FP131	TMS-34	8-160	TVL-1473	
C2A	40	350	218V025H16	AFH4-100-08				-T-502	R2696 *	
B	20	300						-MTD-4530		
C	30	300								
D	30	50								
C3A	150	350	[illegible]	AFH84-56-95	XD0696	FP419.65		-T-115	TVL-4605.5	
B	4	300						-MTD-308		
C	60	300								
D	10	300								

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C4	.047	400	210V014A73	P488N-047	DF-503	CUB4S47	GEM-4147	47M-S47	
C5	1500		215V300E38	BPD-0015	DD-152	BYA10D15	DC5215	56K-D15	
C6	.022	200	210V042A33	P288N-022		CUB4P22	GEM-4123	47M-P22	
C7	4700		215V104A72	BPD-0047	DD-472	LT6D47	UC-5347	56K-D47	
C8	680		215V115A81	SI 680	DD-681	BYA10T68	UC-5368	5GA-T68	
C9	800		215V300E18	BPD-0008	DD-801	LI0T8		5GA-T8	
C10	680		215V115A81	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C11	.22	200	210V022A34	P288N-22		CUB4P22	GEM-4022	47M-P22	
C13	2.2		217V013A19		DTZ-2R2				[illegible]
C13	15								N220 10% ①
C14	22			NPO-DI 22	DTZ-22	C10Q22C		5TCC-Q22	NPO ②
C15	15				DTZ-15				NPO 5% ③
C16	470		215V300H07	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C17	1500		215V300H38	BPD-0015	DD-152	BYA10D15	DC5215	56K-D15	
C18	1500		215V300E38	BPD-0015	DD-152	BYA10D15	DC5215	56K-D15	
C19	56		215V015A60						N220 10%
C20	.22	400	210V042A34	P488N-22		CUB4P22	GEM-4022	47M-P22	
C21	10000	1400	210V061A03	DAC-27		HVE1681		20HKB-81	
C22	4700	1400	215V3[illegible]	HVD-15-4700	DD30-472	HVC16D47		20HKB-D6	
C23	.1	400	210V011A04	P488N-1	DF-104	CUB4P1	GEM-401	47M-P1	
C24	4.7		217V014A78	NPO-SI 4.7	TCZ-4R7	CTA4V4C	ZT-5547	5TCCB-V47	10%
C25	4.7		217V014A79	NPO-SI 4.7	TCZ-4R7	CTA4V47C	ZT-4547	5TCCB-V47	10%
C26	3.3		215V300J039	NPO-SI 3.3	TCZ-3R3	CTA4V33C		5TCCB-V33	NPO ± .25mmf
C27	10000		215V101A03	BPD-01	DD-103	BYA10I61	DC5I1	56K-S1	
C28	1500		215V300E31	BPD-0015	DD-152	BYA10D15	DC5215	56K-D15	
C29	4700		215V104A72	BPD-0047	DD-472	BYA10D47M	UC-5347	56K-D47	
C30	4700		215V104A72	BPD-0047	DD-472	BYA10D47M	UC-5347	56K-D47	
C31	.022	400	210V052A33	P488N-022		CUB4S22	GEM-4122	47M-S22	
C32	.0047	600	210V064A72	P868N-0047	DD-472	CUB6D47	GEM-6247	67M-D47	
C33	10000		215V101A03	BPD-01	DD-103	BYA10I61	DC5I1	56K-S1	
C34	.47	400	210V054A74	P488N-47		CUB4P47	GEM-4047	47M-P47	
C35	4700		215V104A72	BPD-0047	DD-472	BYA10D47M	UC-5347	56K-D47	
C36	.0027	600	210V102H12						10%
C37	.047	400	210V014A73	P488N-047	DF-503	CUB4S47	GEM-4147	47M-S47	
C38	.15	200	210V041A54	P288N-15		CUB2P15	GEM-3015	27M-P15	
C39	.047	400	210V011H72						10%
C40	.068	600	210V110H06						10% ③
C41	.33	200	210V033A34				GEM-3033		
C42	47		215V136A70	NPO-DI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO 10%
C43	39		215V133A90	NPO-DI 39		C10Q39C		5TCC-Q39	NPO 10%
C44	220		215V300H41		MD-221	L10T22		5TCC-T22	10%
C45	680		215V300J33		MD-681				10%
C46	.01	400	210V001A25	P488N-01	DF-103	CUB4S1	GEM-411	47M-S1	
C47	.1	400	210V001A04	P488N-1	DF-104	CUB4P1	GEM-401	47M-P1	
C48	1000		213V071A03	1464-001		1R5I1	MCB2S1	MS-21	10%
C49	68		215V300J39	NPO-DI 68	DTZ-68	C10Q68C		5TCC-Q68	NPO 10%
C50	19-180		217V501H01						
C51	390		213V013A81	1469-00039	MD-391	5RST39		MS-339	10%
C52	.01	600	210V001A03	P868N-01	DB-103	CUB6S1	GEM-411	67M-S1	
C53	.047	600	210V304A73	P868N-047	DF-503	CUB6S47	GEM-4147	67M-S47	
C54	.01	400	210V201A03	P488N-01	DB-103	CUB4S1	GEM-411	47M-S1	
C55	.033	600	210V723A33	P868N-033		CUB6S33	GEM-6133	67M-S33	
C56	.47	400	210V054A74	P488N-47		CUB4S47	GEM-4047	47M-S47	
C57	180	5000	210V330E37						N1500 5%
C58	.22	600	210V723A34	P868N-22		CUB6P22	GEM-6022	67M-P22	
C59	680		215V115A81	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C60	680		215V115A81	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C61	680		215V115A81	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C62	470	2000	215V300E20	HVD-30-470	DD30-471	HVB20T47	DC30247	30GA-T47	
C63	.033	600	210V723A33	P868N-033		CUB6S33	GEM-6133	67M-S33	②
C64	.15	600	210V221A34	P868N-15			GEM-6015	67M-P15	
C65	680	2000	215V300G19	HVD-30-680	DD30-681	HVB20T68	DC30368		
C66	680	2000	215V300H19	HVD-30-680	DD30-681	HVB20T68	DC30368		
C67	680	2000	215V300J19	HVD-30-680	DD30-681	HVB20T68	DC30368		
C68	1500	1400	215V301A52	HVD-15-1500	DD30-152	HVC16D15	DC30215		
C69	1500	1400	215V301A52	HVD-15-1500	DD30-152	HVC16D15	DC30215		

① Some versions use 47mmf NPO 10% in this application (Part #215V124A70).
② Not used in some versions.
③ Ch. V-2364-1, -2 use .047mfd 600V 10% in this application (Part #210V110H03).

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse Part No	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No	MALLORY Part No	INSTALLATION NOTES
R1	500K	½	270V051H01		RTV-665		FPU8A	Volume & Switch
R2A	15K	½	270V032H07	B-20	A47-15K-S	B11-118	TA15L	Contrast
B	Shaft			Not Req.	FS-3	SK1	Not Req.	
R3A	100K	½	[illegible]	B-40	A47-100K-S	Q11-128	TA15L	Brightness
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R4A	3meg	½	270V032H08	B-75	A47-2meg-S	Q11-139	TA36L	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R5A	60K	½	270V032H01	B-35	A47-75K-S	Q11-125		Horiz. Hold
B	Shaft			Not Req.	KS8-3	Not Req.		
R6A	500K	½	270V035H03					Vert. Lin.
B	800Ω							Quieting
R7A	5meg	½	270V035H02					Sync
B	5meg							Height

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed

ITEM No.	RATING: OHMS	RATING: WATT	Westinghouse Part No.	NOTES
R8	10K		250V221A03	
R9	15meg 5%		250V211A56	
R10	1.5meg 5%		250V211A85	
R11	3900Ω		259V003H02	
R12	560K 5%		250V215A64	
R13	3900Ω		259V003H02	
R14	470Ω		250V234A71	
R15	47Ω		250V224A70	
R16	8200Ω		[illegible]	
R17	100K 5%		250V211A04	
R18	3900Ω		[illegible]	
R19	470Ω		250V234A71	
R20	47Ω		250V224A70	
R21	470Ω		250V234A71	
R22	150Ω		[illegible]	
R23	220Ω		250V222A21	
R24	3900Ω 5%		250V213A92	
R25	8200Ω		[illegible]	
R26	2700Ω	3	251V014H11	
R27	2700Ω	3	251V014H11	
R28	470Ω		250V234A71	
R29	10Ω		250V221A00	
R30	150K		250V221A54	
R31	100K		250V221A04	
R32	150K		250V221A54	
R33	1meg		250V221A05	
R34	1000Ω		250V221A02	
R35	18K		250V221A83	
R36	12K 5%		250V211A32	
R37	68K 5%	1	[illegible]	
R38	470K		250V234A74	
R39	39K		[illegible]	
R40	470Ω		250V234A71	
R41	1meg	1	[illegible]	
R42	12K		[illegible]	
R43	22K	2	250V422A23	
R44	330Ω	1	250V323A31	
R45	270K		250V222A74	
R46	47K		250V224A73	
R47	68K		[illegible]	
R48	22K		250V222A23	Note 1

ITEM No.	RATING: OHMS	RATING: WATT	Westinghouse Part No.	NOTES
R49	39K		250V223A93	Note 1
R50	10K	2	250V432A03	
R51	2.2meg		250V223A25	
R52	6800Ω		250V226A82	
R53	150K		250V221A54	
R54	82K		250V228A23	
R55	2.2meg	1	250V223A25	
R56	150Ω		250V231A51	
R57	1meg		250V221A05	
R58	100K		250V221A04	Note 2
R59	22K	1	250V322A23	
R60	22Ω		250V222A20	Note 3
R61	560Ω		250V225A61	
R62	560Ω		250V225A61	
R63	680K		250V228A84	
R64	1meg		[illegible]	
R65	680K		250V228A84	
R66	47K		250V224A73	
R67	47K	1	250V324A73	
R68	82K		250V228A23	
R69	820Ω	2		Note 4
R70	1000Ω		250V221A02	
R71	180K 5%		250V211A84	
R72	56K		250V225A63	
R73	10K		250V221A03	
R74	4700Ω		250V224A72	
R75	150Ω		250V231A51	
R76	470K		250V224A74	
R77	1000Ω	1	250V321A02	
R78	12K	7	251V020H13	
R79	680K		250V228A84	
R80	4700Ω	1	250V324A72	
R81	4.7Ω		251V004A79	
R82	100K	1	259V003H09	
R83	150Ω	20	251V017H21	
R84	820Ω	4	251V020H51	
R85	270Ω	2	250V422A71	
R86	5600Ω	1	250V325A52	
R87	7.5Ω		259V007H01	
R88A	45Ω	20		
B	13Ω	5	251V016H10	

Note 1. Ch. V-2364-1, -2 have R48 and R49 reversed.
Note 2. Ch. V-2364-1, -2 use 180K in this application (Part #250V221A84).
Note 3. Ch. V-2364-1, -2 use 47Ω in this application (Part #250V224A70).
Note 4. Some versions use 1000Ω in this application (Part #250V221A02).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	NOTES
L1	47.35MC Trap	230V062H01					Includes Assy.
L2A	1st. Video IF	235V003H01					
B	41.25MC Trap						
L3	2nd. Video IF	235V020E01					
L4	47.25MC Trap	230V042H01					Note 1
L5	3rd. Video IF	235V020H01					
L6	4th. Video IF	235V005H03					Includes M4 & Assy.
L7	RF Choke	230V019H10	19-1006		4624		14 Microhenries
L8	Shunt Peaking Coil	230V034H09	19-3300	TV-300	6132	VP-7	330 Microhenries
L9	4.5MC Trap	230V030H02					
L10	Series Peaking Coil	230V034H08	19-3160	TV-196	6130	VP-5	160 Microhenries
L11	Shunt Peaking Coil	230V034H07	19-4950	TV-308	6157		910 Microhenries
L12	1st. Sound IF	230V030H06					
L13	2nd. Sound IF	235V020H02					
L14	Quadrature Coil	230V031H01					
L15	RF Choke	230V019H10	19-1006		4624		14 Microhenries
L16	RF Choke	230V019H10	19-1006		4624		14 Microhenries

Note 1. Alternate Part #230V030H01 used when 47mmf parallel cap. is used.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Westinghouse Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	NOTES
L17	108Ω		230V052H01						

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA: Westinghouse Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L18	.210A	17Ω	.5 Hy.	430V032H05 ①	C5040	C-2994		C-2327	26C41	C-27X

① Alternate Part #430V032H01.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: Westinghouse Part No	Halldorson Part No	Merit Part No	Ram Part No	Stancor Part No	Thordarson Part No.	Triad Part No.	NOTES
T1	Vert. Output	430V039H01	Z1900 ①		V30T	A-8142 ②		A-108X	
T2A	Yoke-Horiz. (19.6MH)	490V006H03					T-53 ④		
B	(110°)-Vert.(32MH)	③							
M7	Rear Cover & Centering Device	781V101H01							
	Yoke Clamp	768V014H03							
T3	Horiz. Output	493V003H05						FLY-95 *	

① Use 8 : 1 turns ratio.
② Drill new mounting hole(s).
③ Less leads and resistors.
④ Use original rear cover, centering device and yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
6					6	
5					4	
4					4	
T					T	
3					3	
1					1	
2					2	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: Westinghouse Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T4	7500Ω	3-4Ω	430V045H01	22115 ①	A-3030	AU-804	A-3823	26B46	S-92	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: Westinghouse Part No.	QUAM Part No.	NOTES
SP1	5"	PM	3-4Ω	570V045H02 ①	5A1	① Used in Models H-2IT206, A, 207, A, H-2ITU306, A, 207, A
	5"			570V017H01 ②		② Used in Models H-21K210, 211, H-21KU210, 211
	5"			570V047H01 ②		③ Alternate Part Number used in Models H-2IT206, A, 207, A, H-2ITU306, A, 207, A
	8"			570V037H01 ②		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse Part No.	REPLACEMENT DATA	
K1	Sync Separator Coupling	330mmf, 220K	[illegible]	Centralab	RC-431
				Sprague	R-9179
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω, 8200Ω	219V003H01	Aerovox	PA-501
				Centralab	PC-104
				Sprague	V-3
K3	Chassis Isolation	1000mmf ④ 1400V, 330K	216V004H03		

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Westinghouse Part No.	FEDERAL Part No.	GENERAL ELECTRIC Part No.	INTERNATIONAL Part No.	SARKES TARZIAN Part No.	NOTES
M1	.330A	295V006H01 ①		1N1006 ②	TV500 ①	M500 ①	① Silicon Type.
M2	.330A	295V006H04 ①		1N2008 ②	TV500 ①	M500 ①	② Germanium Type.
M3		296V004H01 ③	K1616 ③		6D-91 ①		③ Selenium Type.

CRYSTAL DIODES

ITEM No.	ORIG TYPE	REPLACEMENT DATA: Westinghouse Part No.	CBS Part No.	SYLVANIA Part No.	NOTES
M4	K8	V-10918-3 *	1N60	1N295	Video Detector (Pigtail)

* Some versions may use 1N64 or 1N295 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse Part No.	NOTES
M5	Tuner	470V050H01	VHF, with UHF provisions, Code 306, Ch. V-2364-2, -4
	Tuner	470V048H01	VHF, Code 306, Ch. V-2364-1, -3
M6	Tuner	472V024H02	UHF, Ch. V-2364-2, -4
M7	Centering Device	781V101H01	Includes Yoke Rear Cover
	Printed Board	350V042H01	

WESTINGHOUSE MODELS H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU306, A, H-21TU307, A (Ch. V-2364-1, -2, -3, -4)

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

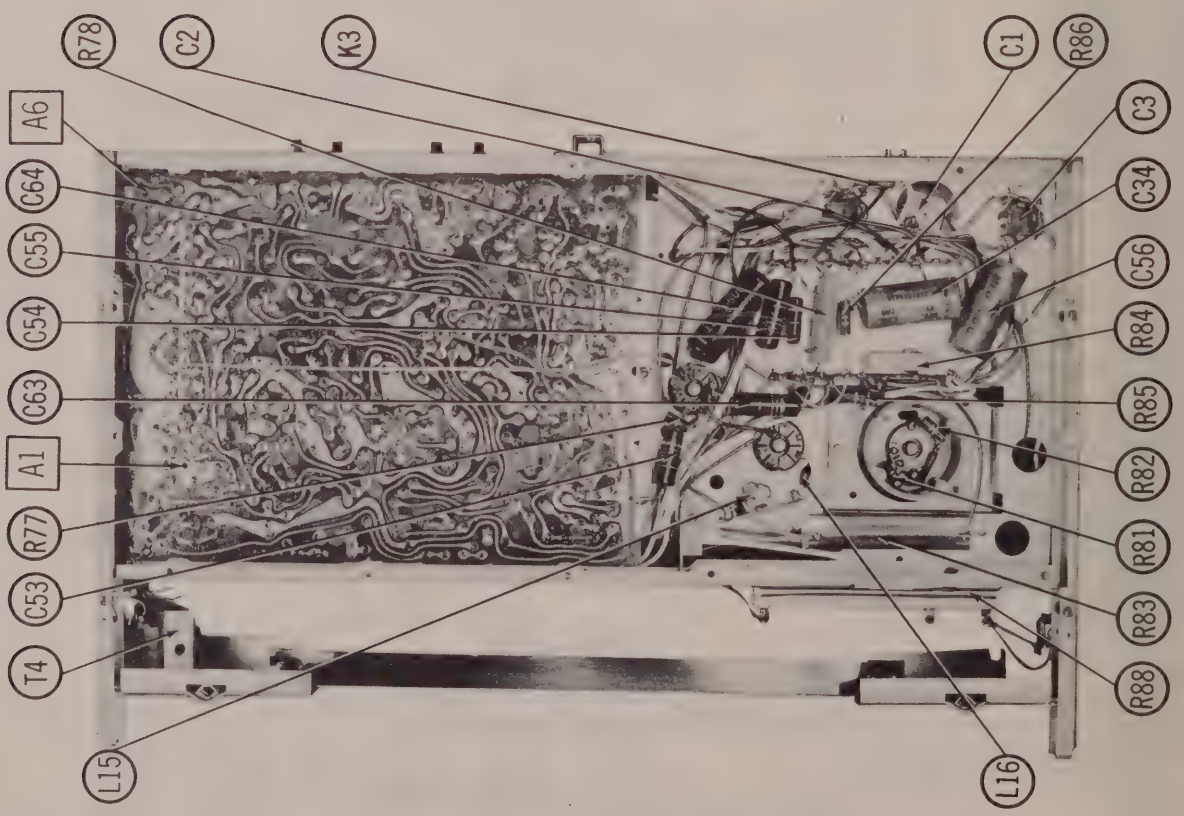
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	630V008H01	
Mask	610V007H02	
Knob	550V078H01	Fine Tuning
Knob	550V046H01	VHF Channel Selector
Knob	550V050H01	UHF Channel Selector, UHF Models
Knob	550V044H01	Horiz., Vert., Brightness
Knob	550V051H02	On-Off -Volume, Contrast
Dial	550V029H04	UHF, Models H-21KU210, 211, H-21TU206, 207
Dial	550V029H07	UHF, Models H-21TU206A, 207A
Cabinet	510V011H21	Model H-21T206, A
Cabinet	510V011H22	Models H-21TU206, A
Cabinet	510V011H23	Models H-21T207, A
Cabinet	510V011H24	Models H-21TU207, A
Cabinet	516V051H01	Model H-21K210
Cabinet	516V051H03	Model H-21KU210
Cabinet	516V051H02	Model H-21K211
Cabinet	516V051H04	Model H-21KU211

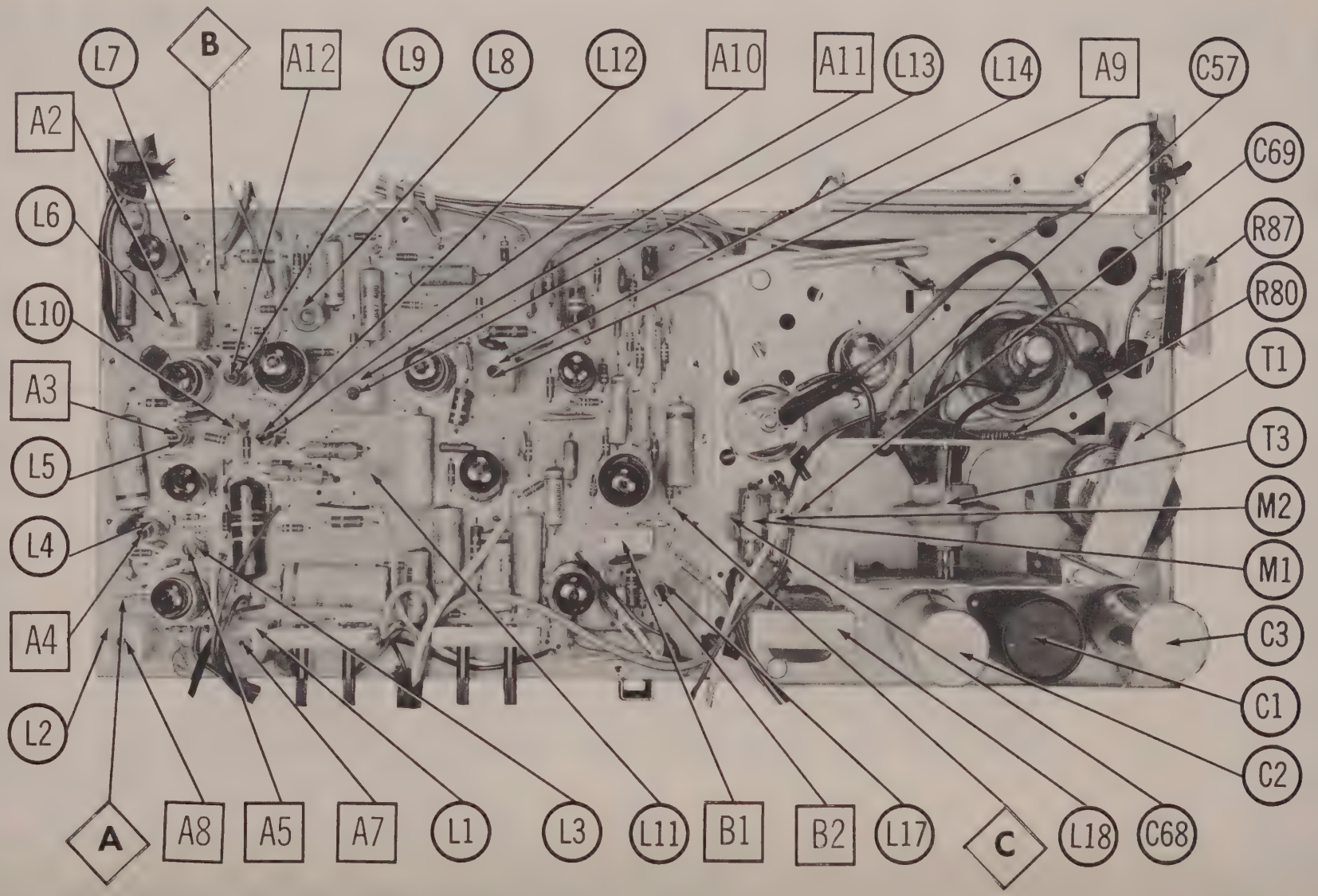
WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



CHASSIS BOTTOM VIEW

RESISTOR IDENTIFICATION



CHASSIS TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2BN4	
V202	Mixer-Osc.	5CG8	

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	2AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	30		690V004H18						
C202	15		215V011A50						5%
C203	15		215V011A50		DTZ-15				5%
C204	2-8		690V004H69						
C205	800		690V004H23						
C206	2-6		690V004H36						
C207	47		690V004H25						
C208	800		690V004H23						
C209	51		690V004H70		TCZ-51				
C210	2-6		690V004H36						
C211	1000		690V004H57	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C212	1		217V001A09	NPO-SI 1.0	TCZ-1				10%
C213	10		V-19015-1						N470 10%
C214	10		V-19015-1						N470 10%
C215									
C216	1000		690V004H29	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C217	85		690V004H71						
C218	800		690V004H23						
C219	1000		690V004H29	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C220	800		690V004H23						
C221	1000		690V004H29	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C222	800		690V004H23						

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		250V224A72	
R202	470Ω	1	250V221A02	
R203	10K		250V221A03	
R204	220K		250V222A24	
R205	1000Ω		250V221A02	
R206	10K		250V221A03	
R207	10K		250V221A03	

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R208	5600Ω		250V225A62	
R209	2700Ω	1		
R210	3300Ω			
R211	680K			
R212	5600Ω			
R213	100Ω			

COILS (RF-IF)

ITEM No.	USE	Westinghouse PART No.	NOTES
L201	Ant. Input Assy.	690V004H51	Includes Input Trans, Trap, K201, K202
L202	IF Trap Coil	690V004H38	

ITEM No.	USE	Westinghouse PART No.	NOTES
L203	RF Choke	690V004H39	
L204	Mixer Plate Coil	690V004H40	

COMPONENT COMBINATIONS

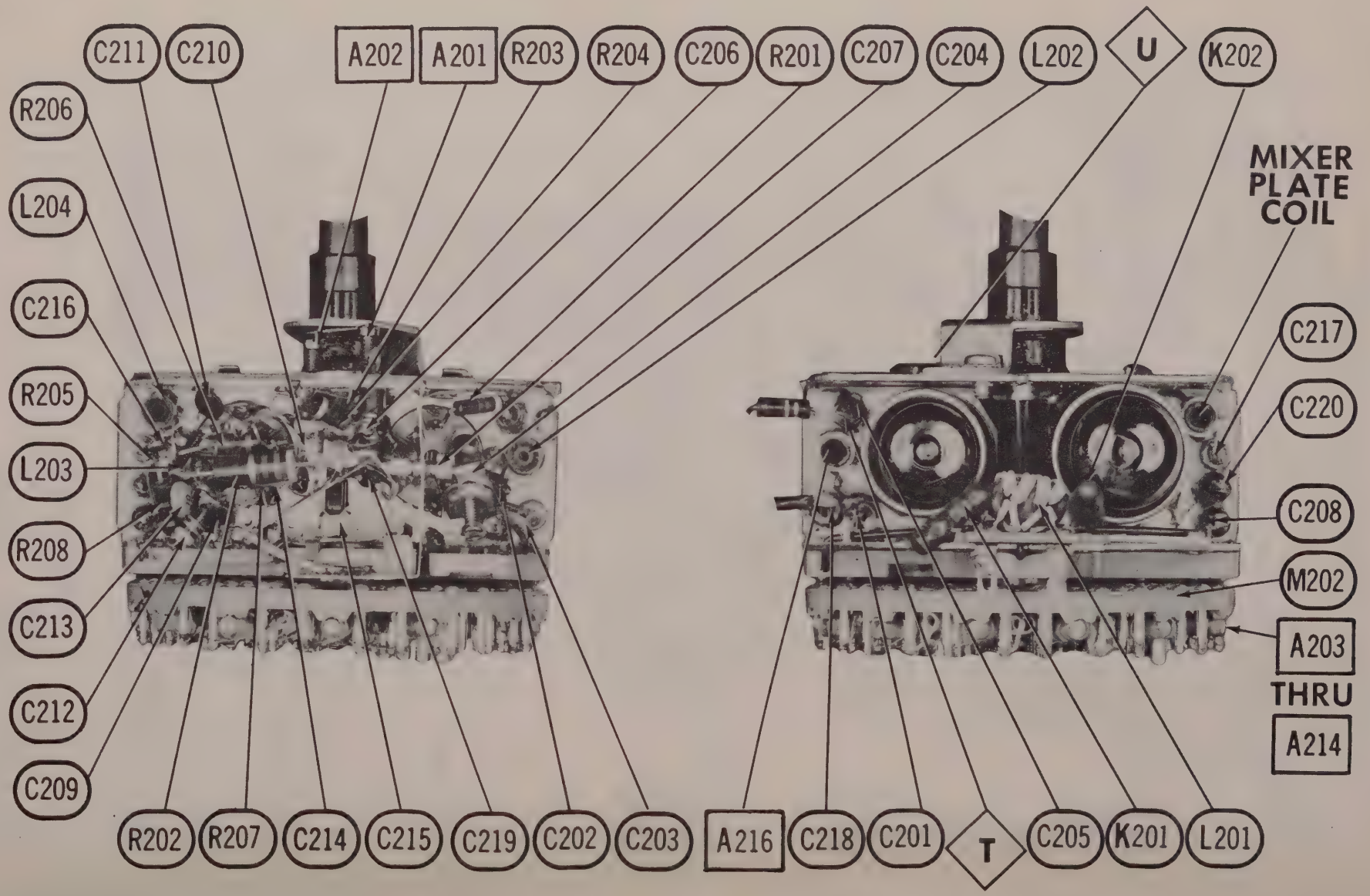
ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177
K202	Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Westinghouse PART No.	CBS PART No.	SYLVANIA PART No.	
M201	1N82A	V-8634-3	1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M202	Rotor Disc	690V004H68	Complete Assy.
M203	Rear Cover	690V004H66	Tuner #470V050H01
	Rear Cover	690V004H49	Tuner #470V049H01


C211
C210
A202
A201
R203
R204
C206
R201
C207
C204
L202
U
K202
R206
L204
C216
R205
L203
R208
C213
C212
C209
MIXER PLATE COIL
C217
C220
C208
M202
A203
THRU
A214
R202
R207
C214
C215
C219
C202
C203
A216
C218
C201
T
C205
K201
L201

VHF TUNER

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	100K	47Ω	5Ω	5.5Ω	†2000Ω	†2000Ω	0Ω		
V2	3BZ6	100K	47Ω	5.5Ω	6Ω	†2000Ω	†2000Ω	0Ω		
V3	3DK6	.1Ω	150Ω	6Ω	7Ω	†2000Ω	†2000Ω	0Ω		
V4	6AU8	0Ω	470K	†40K	11Ω	9.5Ω	10Ω	3900Ω	•†2000Ω	†5500Ω
V5	5AN8	•ǂ4.5meg	•1.2meg	0Ω	9.5Ω	8.5Ω	660K	†17Ω	†23K	†10K
V6	3BN6	•120Ω	.4Ω	11Ω	11.5Ω	†22K	6.8Ω	ǂ1meg		
V7	5AQ5	0Ω	330Ω	8.5Ω	7Ω	†1300Ω	†5600Ω	0Ω		
V8	3CS6	50K	0Ω	11.5Ω	12Ω	†35K	†11K	2.2meg		
V9	5CZ5	†17Ω	NC	•1.1meg	13.5Ω	12Ω	•1.1meg	22Ω	NC	†475Ω
V10	6CG7	†57K	•200K	1000Ω	1.5Ω	0Ω	†48K	1.7meg	1000Ω	0Ω
V11	12DQ6	NC	16Ω	NC	†13K	470K	TP	13.5Ω	0Ω	TOP CAP ǂ22Ω
V12	12D4	NC	NC	¶ 5meg	NC	†18Ω	NC	18Ω	16Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ637Ω
V14	21CEP4	1.5Ω	150K	ǂ1meg	†1500Ω	NC	NC	• 180K	3Ω	
V201	2BN4	0Ω	2.2meg	3.5Ω	4Ω	†2500Ω	0Ω	2.2meg		
V202	5CG8	10K	†6900Ω	0Ω	5Ω	4Ω	†2500Ω	†11K	0Ω	230K
V203	2AF4A	†*4600Ω	*5600Ω	3.5Ω	3Ω	*.1Ω	*5600Ω	†*4600Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

■ THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

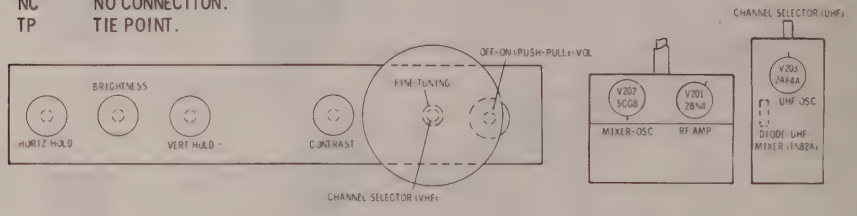
• MEASURED IN "UHF" POSITION.

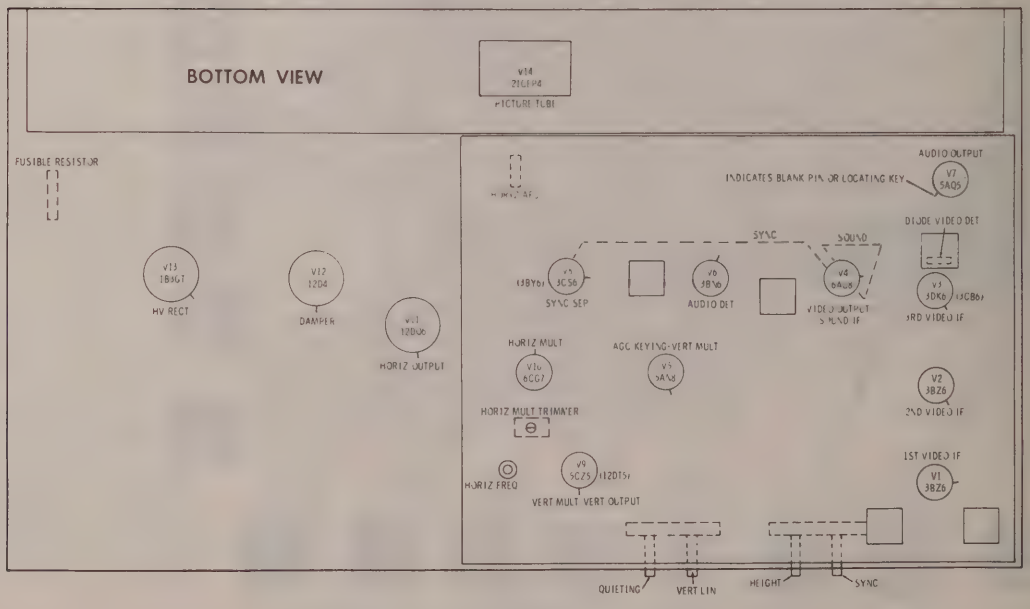
† MEASURED FROM 270V SOURCE.

ǂ MEASURED FROM PIN 3 OF V12.

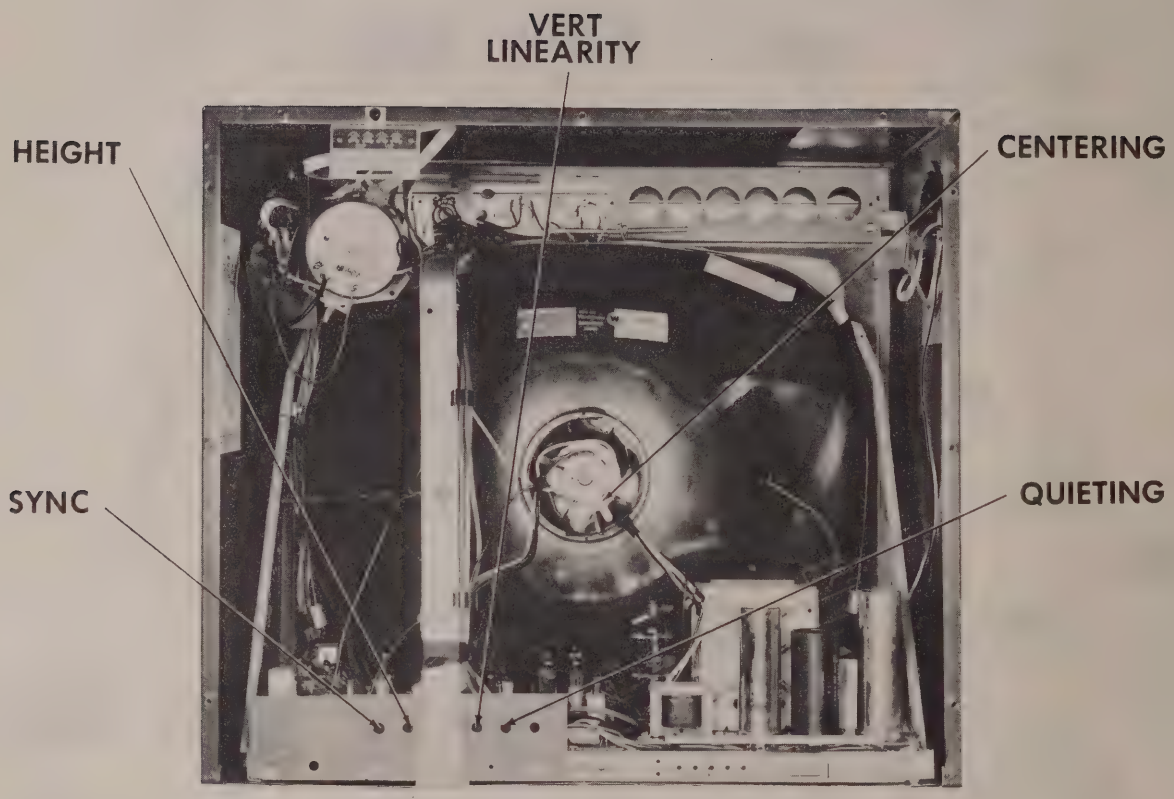
NC NO CONNECTION.

TP TIE POINT.





TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short clip lead across the Horizontal Frequency Coil (L17).

Set the Horizontal Hold to the center of its range.

Connect the DC probe of a VTVM to point Ⓒ Common to chassis.

Tune in a TV station and adjust the Horizontal Multivibrator trimmer (B1) for zero volts on the VTVM. If zero can be approached but not reached, set the Horizontal Hold SLIGHTLY to one side of center for zero voltage.

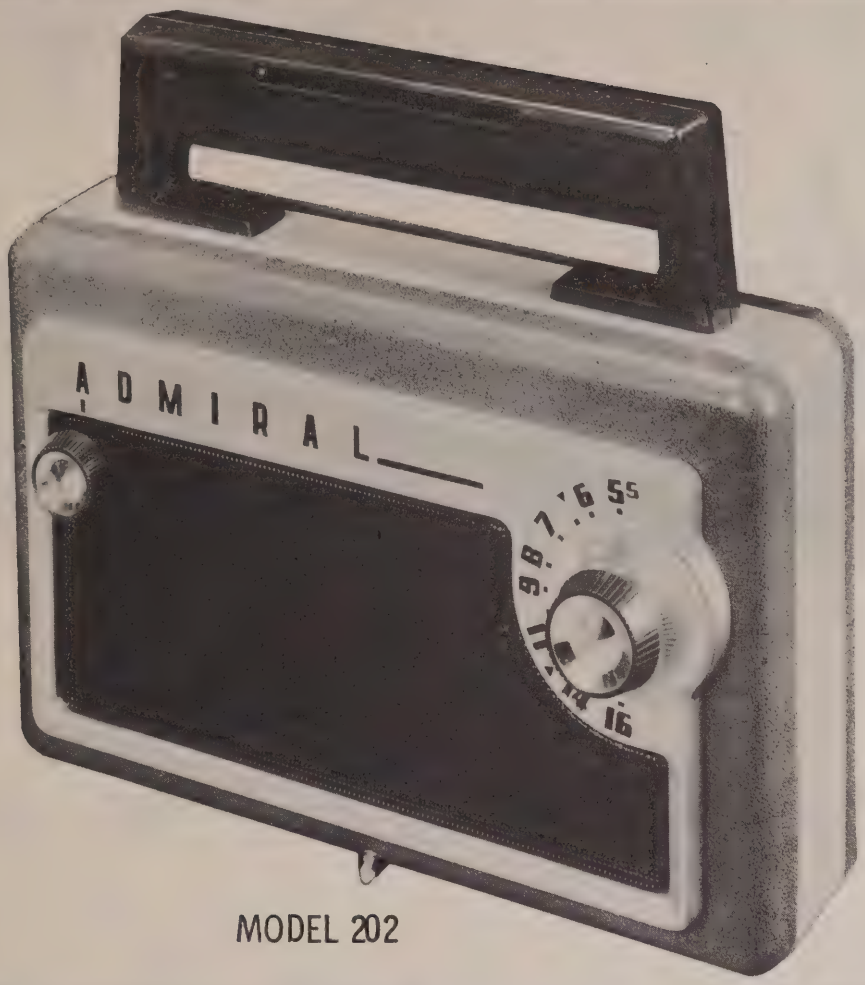
Remove the jumper from L17 and adjust the Horizontal Frequency slug (B2) for zero reading on the meter. Check lock-in action by switching from channel to channel. The picture should pull into synchronization on all channels.

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ADMIRAL MODELS 202, 215, 217, 218 (Ch. 4W2)

ADMIRAL MODELS 202,
215, 217, 218 (Ch. 4W2)



MODEL 202

ADMIRAL MODELS 202,
215, 217, 218 (Ch. 4W2)

TRADE NAME	Admiral Models 202, 215, 217, 218 (Chassis 4W2)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output.
POWER SUPPLY	110-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 90 Volts "B" Supply
RATING	.08 Amp. @ 117 Volts AC (or) 56MA @ 7.5 Volts DC & 10.8MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	1. mfd	High side to antenna stator lug of tuning cap. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		Loop	1400KC	Tune to 1400 KC signal.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. -AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■80	150	67C30-6	AFH3-64-65					R2431*
B	▲60	150							
C	250	10							

*Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	47		65D10-80	DI-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C3	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C4	10000		65D10-3	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	10000		65D10-3	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C6	2000		65D10-125	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C7	220		65D10-21	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C8	2000	1000	65D10-39	DAC-3	DD-202	BYA10D2		5GA-D2	
C9	150		65D10-85	BPD-00015	DD-151	L10T15	UC-5315	5GA-T15	
C10	10000		65D10-3	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C11	5000		65C39-8	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C12	2000	1000	65D10-39	DAC-3	DD-202	BYA10D2		5GA-D2	
C13	.25	25	64B23-502	P288N-25		BC2P22J	ACE6022	2SE-P22	
C14	10000		65D10-3	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	.047	400	64B17-28	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	75C40-2					Volume & Switch

RESISTORS

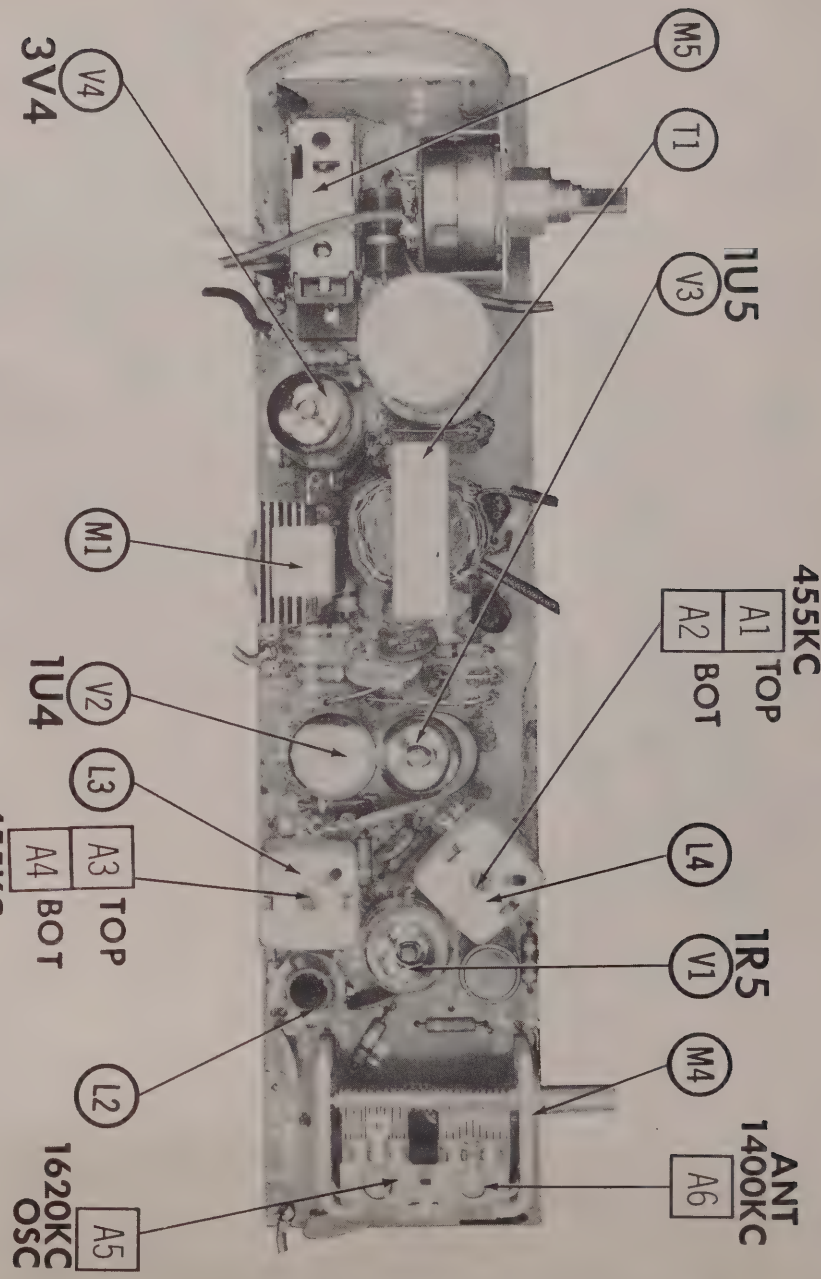
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R2	100K		60B8-104	
R3	15K		60B8-153	
R4	10meg		60B8-106	
R5	1500Ω		60B8-152	
R6	3.3meg		60B8-335	
R7	10meg		60B8-106	
R8	1meg		60B8-105	
R9	4.7meg		60B8-475	
R10	3.3meg		60B8-335	
R11	2200Ω	8	61A4-8	
R12	1500Ω	2	60B20-152	
R13	1500Ω		60B8-152	
R14	220Ω		60B8-221	
R15	180Ω		60B8-181	
R16	120Ω		60B8-121	
R17	100Ω		61A11-4	Fuse Type

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	69B226-2					
L2	Osc. Coil	69A211-3					
L3	Input IF	72C170-1	16-6780	BC-356	13-PC7	RF-4	
L4	Output IF	72C170-1	16-6780	BC-357	13-PC8	RF-4	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9500Ω	3-4Ω	79B79-1				A-3329①	24S83①	S-11X①	① Use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78B133-4	4A07①	①Cut 1/4" slots in mounting holes.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	ADMIRAL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	06A	93B1-11	1234AH	RS075	75	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M2 M3	7.5V 90V		C5	P60	717	479	M9	M214	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuning Cap.	68B66-8	2 gang (Ant. 23-314mmf)
M5	Switch	77B64	AC-DC-Battery (Slide Type)
	Printed Board	14E222	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

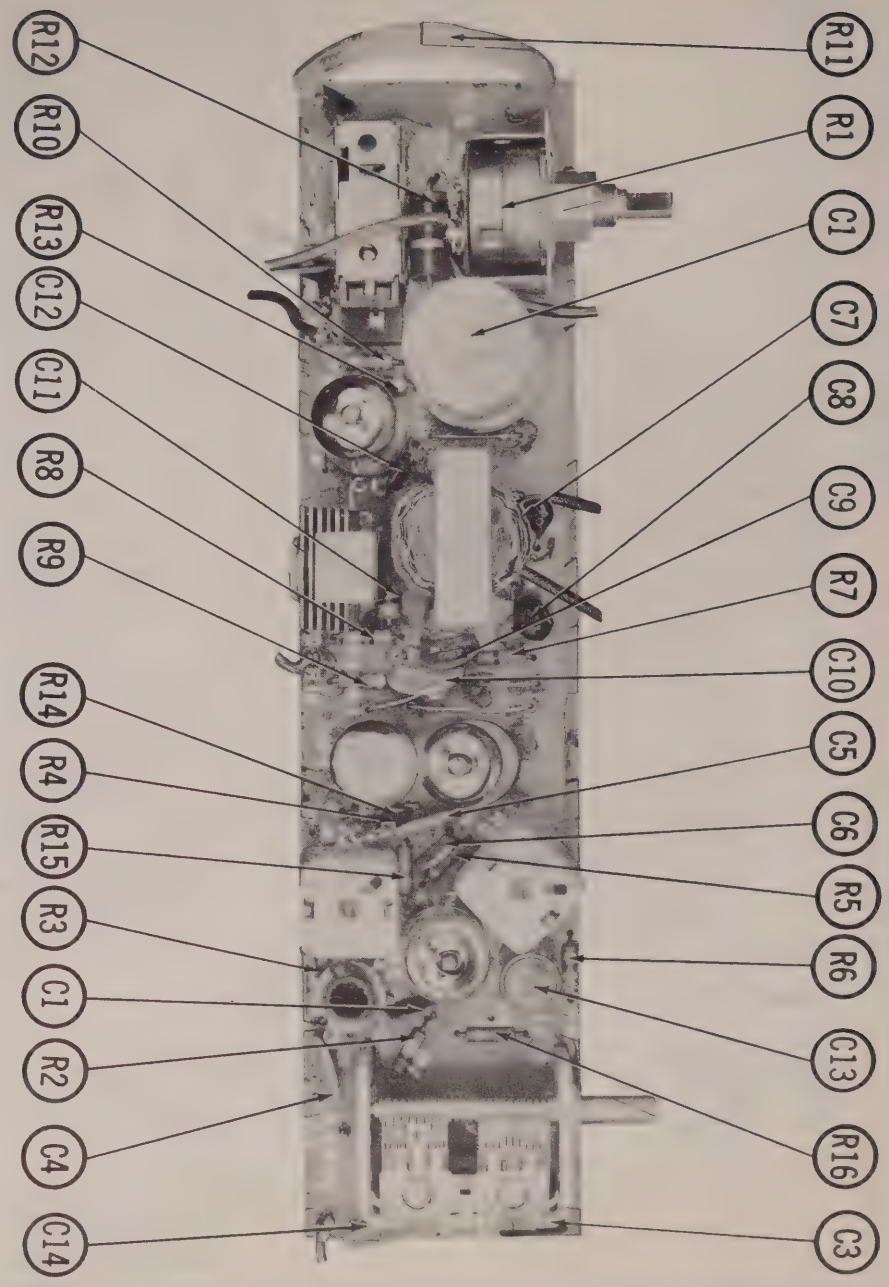
NAME	PART NO.	DESCRIPTION
Knob	33C232-6	Tuning, Models 202, 217
Knob	33C232-3	Tuning, Models 215, 218
Knob	33C232-4	Volume, Models 202, 217
Knob	33C232-1	Volume, Models 215, 218
Cabinet	34E120-5	Less Handle, Escutcheon, and Grille, Model 202
Cabinet	34E120-6	Less Handle, Escutcheon, and Grille, Model 215
Cabinet	34E120-7	Less Handle, Escutcheon, and Grille, Model 217
Cabinet	34E120-8	Less Handle, Escutcheon, and Grille, Model 218
Handle Half	33D234-1	Tongue, Models 202, 217
Handle Half	33D234-2	Tongue, Models 215, 218
Handle Half	33D234-3	Groove, Models 202, 217
Handle Half	33D234-4	Groove, Models 215, 218

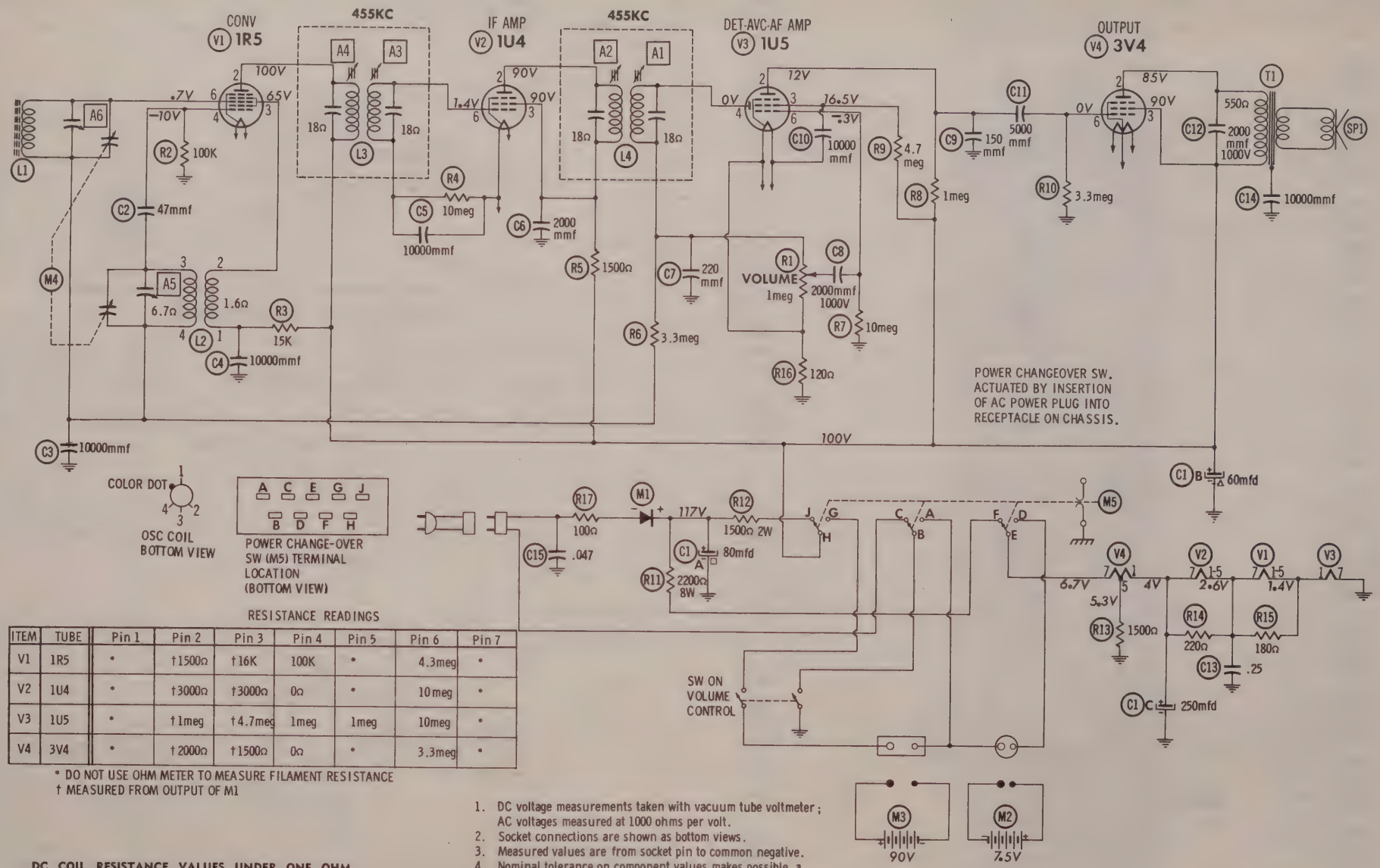
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW





COLOR DOT

OSC COIL BOTTOM VIEW

A C E G J
B D F H

POWER CHANGE-OVER SW (M5) TERMINAL LOCATION (BOTTOM VIEW)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†1500Ω	†16K	100K	•	4.3meg	•
V2	1U4	•	†3000Ω	†3000Ω	0Ω	•	10meg	•
V3	1U5	•	†1meg	†4.7meg	1meg	1meg	10meg	•
V4	3V4	•	†2000Ω	†1500Ω	0Ω	•	3.3meg	•

* DO NOT USE OHM METER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

AIRLINE MODELS GTM-1638A, GTM-1639A, GTM-1639B

AIRLINE MODELS GTM-1638A, GTM-1639A, GTM-1639B

MODEL GTM-1639B

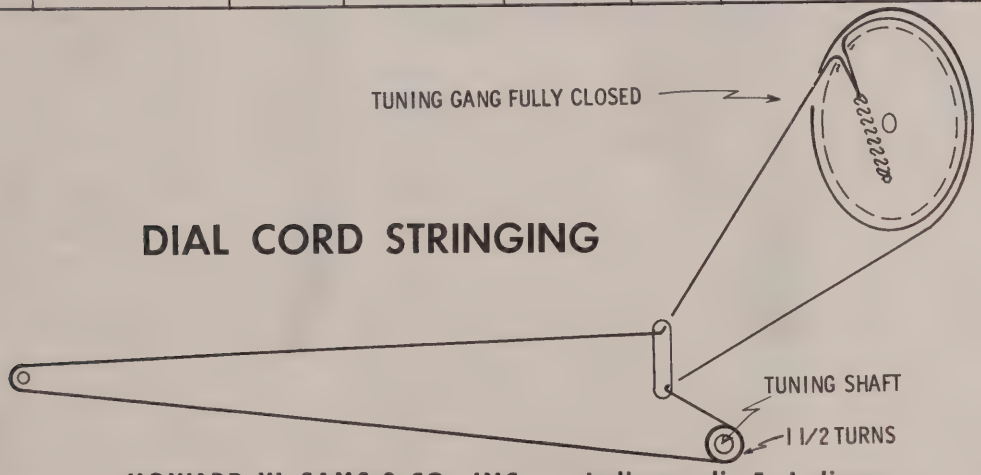
TRADE NAME	Airline Models GTM-1638A,GTM-1639A, GTM-1639B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC-DC Operated AM Receiver
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC — RATING .29 Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position.. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200mmf	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	High side to antenna stator lug of tuning cap. Low side to B-.	1625KC	"	"	A5	"
3.	"	"	1400KC	1400KC	"	A6	"
4.		Loop	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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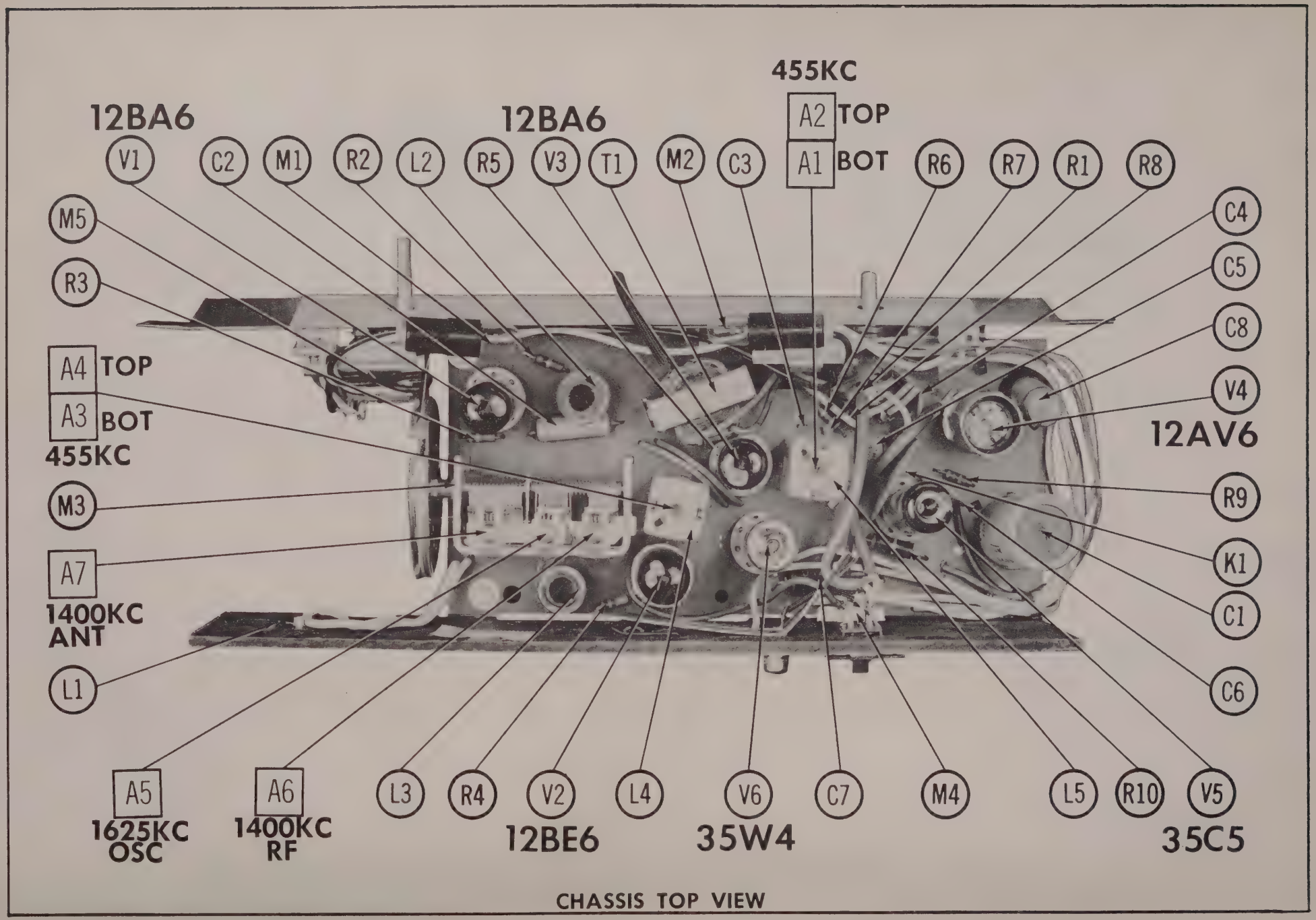


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	

ITEM No.	USE	TYPE	NOTES
V4	Det.-AVC-AF Amp.	12AV6	
V5	Output	35C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	218V043H01 ①	PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	▲50	150							

① Part #218V042H01 used in Model GTM-1638A.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	200		P286N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C3	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	①
C4	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	
C5	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	①
C6	10000	1000	215V300H03	DAC-27	DD16-103	BYA10S1		BL-S10	
C7	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	②
C8	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	③

① Not used in Model GTM-1638A.
② Some versions may use .033mfd in this application.
③ Model GTM-1638A use .01mfd in this application (Part #215V306H01).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	270V039H06				PP55L	Volume, Tap ② 200K
B	Switch							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R2	10K			
R3	330Ω			①
R4	22K			
R5	68Ω			②
R6	3.3meg			

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R7	100K			③
R8	68K			
R9	180Ω			
R10	1200Ω	1		

① Some versions use 220Ω in this application.
② Model GTM-1638A use 150Ω in this application.
③ Not used in Model GTM-1638A.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3100Ω	3-4Ω	430V043H01		A-3025①	AU-605 ①	A-3332 ①	24S53 ①	S-12X ①	① Use original channel frame.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	2" X 10"	PM	3-4Ω	570V024H01		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Antenna	317V006H10					①
	Loop Antenna	317V006H11					②
L2	RF Trans	230V037H01					
L3	Osc. Coil	230V004H02					
L4	Input IF	235V023H11	16-6780	BC-356	13-PC9	RF-4	
L5	Output IF	235V023H11	16-6780	BC-357	13-PC10	RF-4	

① Model GTM-1639A, B; includes cabinet back & radio-phono switch. ② Model GTM-1638A includes cabinet back.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 5000mmf, 220mmf, 250mmf, 470K, 470K, 6.8meg	219V001H01	Aerovox PA-512 Centralab PC-158 Sprague DT-4

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M1	Dial Lamp	756V501H02	#1847
M2	Dial Lamp	756V501H02	#1847
M3	Tuning Cap.	330V012H01	
M4	Switch	756V029H01	Phono-Radio, Slide Type—Model GTM-1639 only.
M5	Switch	756V028H01	Tone, Rotary Wafer Type—Model GTM-1639 only.
	Printed Board	V2391-4	

CABINETS & CABINET PARTS

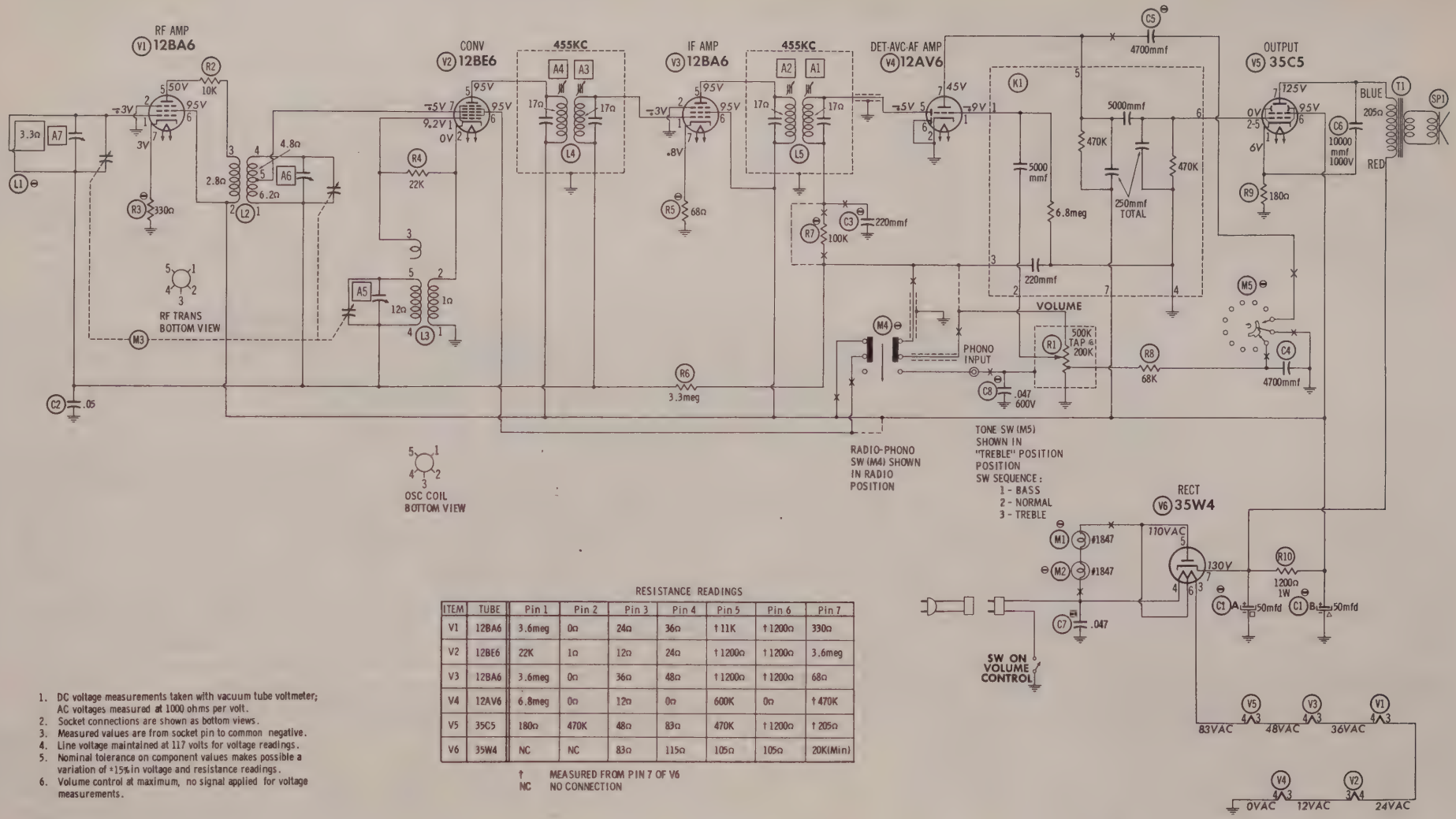
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V075H01	Volume, Models GTM-1639A, B
Knob	550V072H01	Tuning, Models GTM-1639A, B
Knob	550V073H01	Tone, Models GTM-1639A, B
Knob	550V077H01	Two used, Model GTM-1638A
Cabinet	513V017H15	Models GTM-1639A, B
Cabinet	513V017H14	Model GTM-1638A
Pointer	558V089H01	
Dial	558V083H04	Models GTM-1639A, B
Dial	558V083H03	Model GTM-1638A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	3.6meg	0Ω	24Ω	36Ω	†11K	†1200Ω	330Ω
V2	12BE6	22K	1Ω	12Ω	24Ω	†1200Ω	†1200Ω	3.6meg
V3	12BA6	3.6meg	0Ω	36Ω	48Ω	†1200Ω	†1200Ω	68Ω
V4	12AV6	6.8meg	0Ω	12Ω	0Ω	600K	0Ω	†470K
V5	35C5	180Ω	470K	48Ω	83Ω	470K	†1200Ω	†205Ω
V6	35W4	NC	NC	83Ω	115Ω	105Ω	105Ω	20K(Min)

† MEASURED FROM PIN 7 OF V6
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ARVIN MODEL 1581
(Ch. 1.44000)

ARVIN MODEL 1581
(Ch. 1.44000)

ARVIN MODEL 1581
(Ch. 1.44000)

TRADE NAME	Arvin Model 1581 (Ch. 1.44000)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC-DC Operated AM Receiver
TUBES (Four)	Types 12BE6 Converter, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.28 Amp. @ 117 Volts AC (25 Watts)
TUNING RANGE—BROADCAST	540 - 1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Disconnect hank antenna for steps 2, 3, 4 and 5.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	375KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	50mmf	High side to antenna input. Low side to B-	1670KC	"	"	A3	Adjust for maximum output.
3.	"	"	600KC	600KC	"	A4	Adjust for maximum output while rocking tuning gang.
4.	"	"	1400KC	Tune to 1400KC signal	"	A5	Adjust for maximum output.
5.	"	"	600KC	Tune to 600KC signal	"	A6	Adjust for maximum output. Repeat steps 2, 3, 4 and 5.

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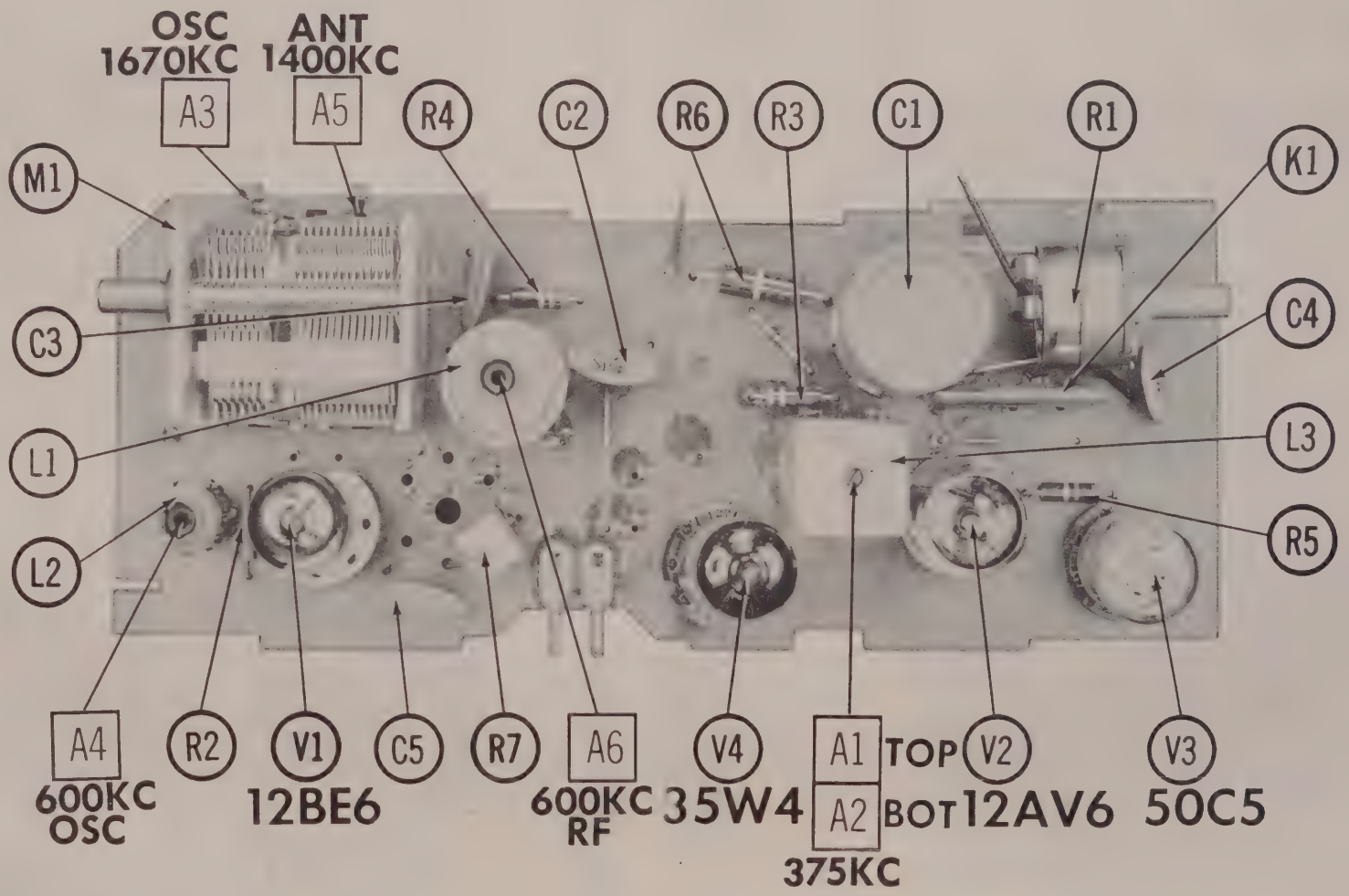


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	Det.-AVC-AF Amp.	12AV6	
V3	Output	50C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	44328-2	PRS150/25V 5030/20	BBRT5315C	TCT3107	TDLT-15	FMT-327	TVA-3430
B	30	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C3	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C4	10000			BPD-01	DD-103	BYA6S1	DC5U	5HK-S1	
C5	20000			BPD-02	DD-203	BYB6S2		5HK-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	1/2	45250-1					Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R2	22K			
R3	3.3meg			
R4	330K			

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R5	120Ω			
R6	2200Ω	1	44448-2	
R7	47Ω	2(WW)		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Antenna Coil	44132-1					
L2	Osc. Coil	43644-6					
L3	IF Trans.	45467-1					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	42700-20 ①	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	① Alternate Part #42700-21

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	45600-1	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 220mmf, 5000mmf, 250mmf, 6.8meg, 470K, 470K	43743-2	Aerovox PA-512 Centralab PC-158 Spraque DT-5

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap. Printed Board	45252-2 45364-1	2 Gang

CABINETS & CABINET PARTS

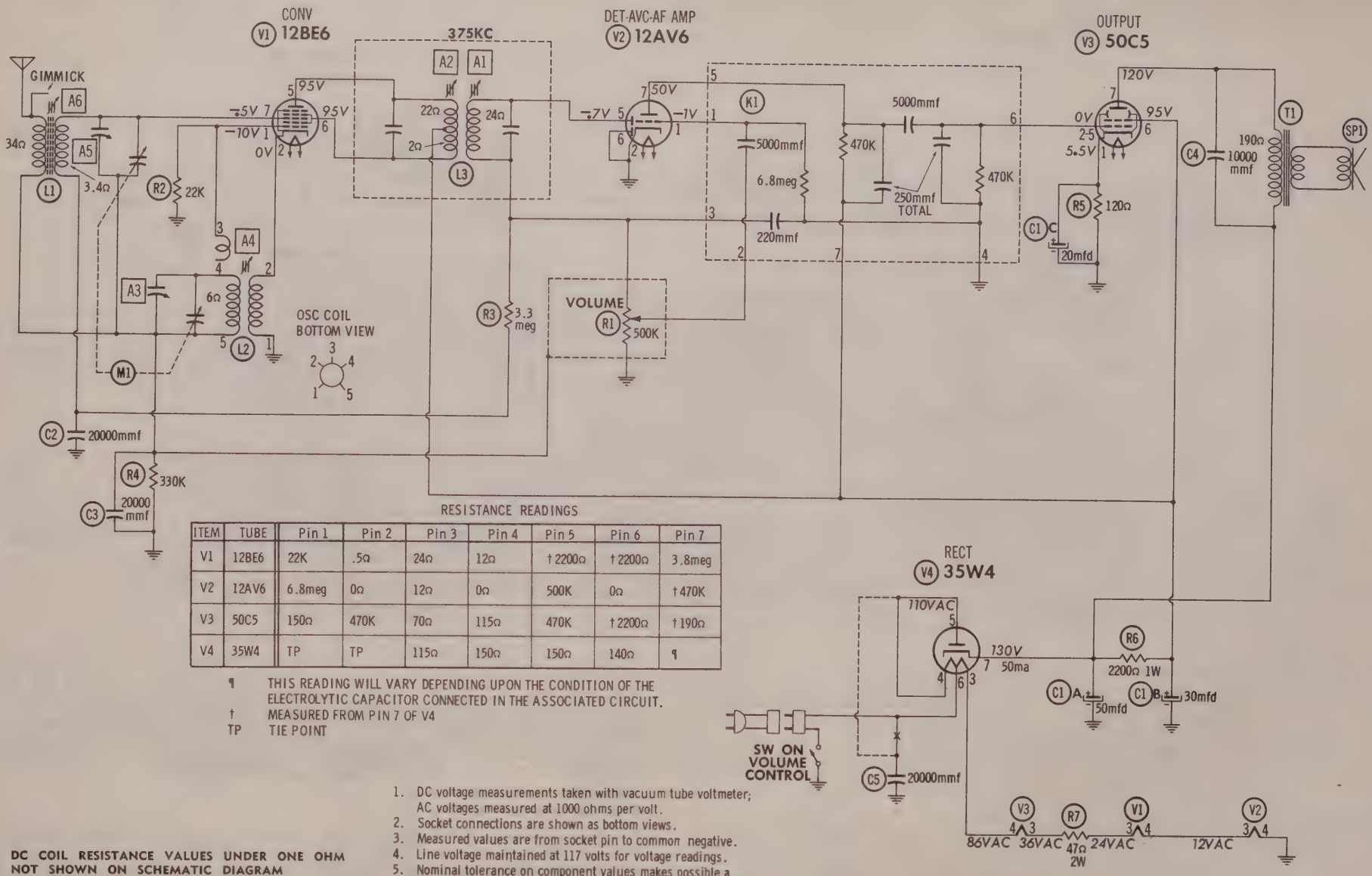
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	45246-17	Tuning
Knob	45247-17	On-Off-Volume
Cabinet	45763-17	
Rear Cover	45248	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	24Ω	12Ω	†2200Ω	†2200Ω	3.8meg
V2	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V3	50C5	150Ω	470K	70Ω	115Ω	470K	†2200Ω	†190Ω
V4	35W4	TP	TP	115Ω	150Ω	150Ω	140Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 7 OF V4

TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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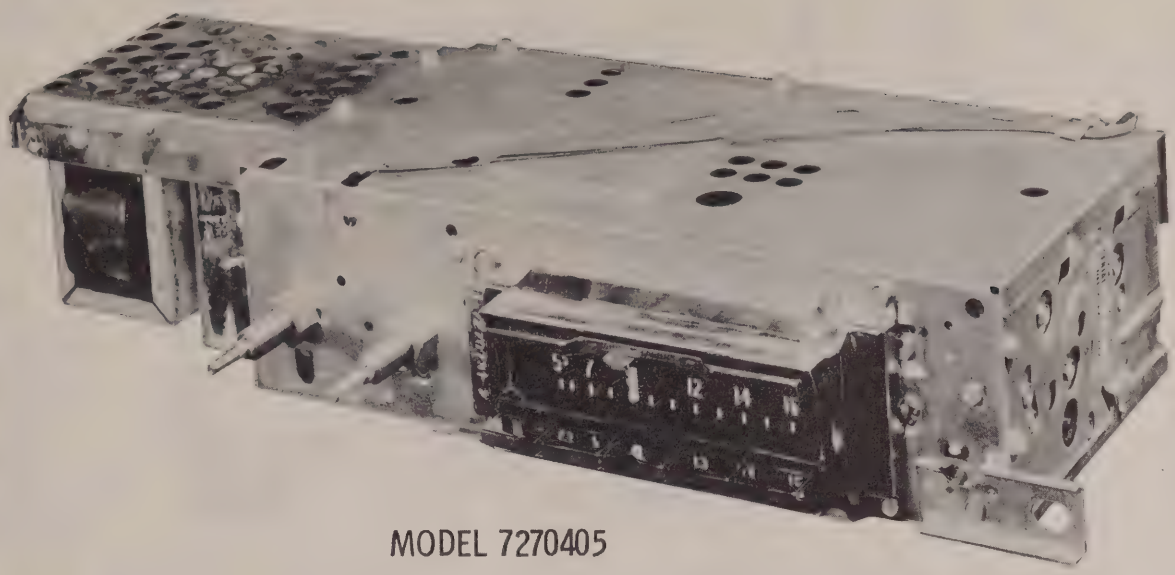
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CADILLAC MODELS 7270405, 7270555

CADILLAC MODELS 7270405, 7270555



MODEL 7270405

TRADE NAME	Cadillac Models 7270405 (For 1958 Cadillac Automobiles), 7270555 (For 1958 Cadillac Ambulances)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver
TUBES (Eight)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12BF6 Det.-AVC-AF Amp. 12AU7 Trigger, (2) 12V6GT Output, 0Z4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 3 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To tune to high frequency stop, put a .070" feeler gauge against the high frequency stop. Depress station selection bar and allow treadle arm to run against feeler gauge. Turn the radio off, then on.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12BE6 (V2) Low side to chassis.	262KC (400~ Mod)	High frequency end stop.	Across Voice Coil	A1, A2, A3	Adjust for maximum output.
2.	"	"	"	"	"	A4	Adjsut for MINIMUM output.
3.	68mmf	High side to Antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Check setting of osc. coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form. Adjust for maximum output.
4.	"	"	600KC	Tune to 600KC signal.	"	A9, A10	"
5.	"	"	1615KC	Tune to 1615KC signal.	"	A7, A8	"
6.	With radio installed in car and antenna fully extended, tune in a weak staion near 1000KC and adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to a 900KC signal, adjust pointer adjustment so that pointer coincides with 900KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to left and out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H582

SET 411 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Det. -AVC-AF Amp.	12BF6	

ITEM No.	USE	TYPE	NOTES
V5	Trigger	12AU7	
V6	Output	12V6GT	
V7	Output	12V6GT	
V8	Rectifier	OZ4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Delco PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 20	400	6322	AFH3-120	C0990	FP345. 8	TMT-106	T-550	TVL-3678
B	▲ 20	400							
C	20	25							

FIXED CAPACITORS

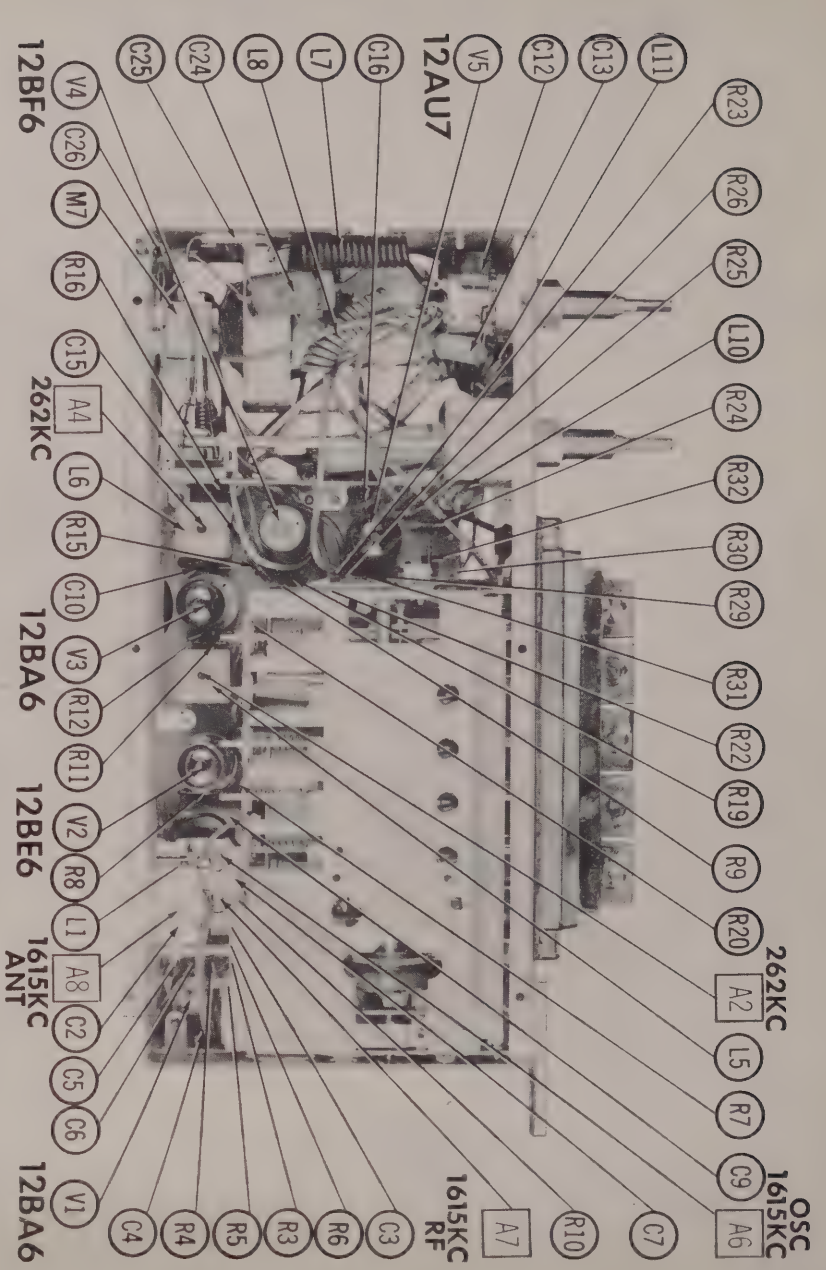
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Delco PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	6-60		7270981						
B	22								
C3	.047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C4	.047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C5	68		6369	DI-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C6	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C7A									
B			7268828						
C									
D									
C8	200		7270129	1469-0002		22R5T2	MCE237	MS-32	5%
C9	.1	400	6613	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C10	100		1219498	1469-0001		22R5T1	MCE235	MS-31	5%
C11	100		1219498	1469-0001		22R5T1	MCE235	MS-31	5%
C12	100		6371	1468-0001	D6-101	5W5T1	MC235	1FM-31	
C13	.002	600	6628	P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C14	.005	600	6631	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C15	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C16	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C17	.2	400	6614	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C18	.022	200	7271396	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C19	.004	800	6564	P1088N-004	DD16-402	CUB10D4	GEM-1024	10TM-D4	
C20A	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C21	.007	1600	6567	P1688N-007	DD16-702	CUB16D7	GEM-1627	MB-D7	
C22	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C23	.47	100	6692	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C24	.47	100	6692	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C25			1212278						
C26	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Delco PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	100K		7270853					Tone
B	1.5meg							Volume, Tap@300K
C	Switch							
R2	40Ω	2(WW)	7270982					Speaker Fader

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Delco PART No.	NOTES
R3	2.2meg		1239	
R4	10K	1	1174	
R5	100Ω		1113	
R6	330K		1229	
R7	100Ω		1113	
R8	22K		1215	
R9	1.5meg		1237	
R10	12K	2	1276	
R11	10Ω		1101	
R12	150Ω		1115	
R13	820K 5%		1219491	
R14	180K 5%		7271550	
R15	1.5meg		1219492	
R16	100K		1223	
R17	680K		1233	
R18	100K		1223	
R19	1meg		1235	
R20	3300Ω 5%		1220173	
R21	47K	1	1259	
R22	1000Ω 5%		1220176	
R23	1meg		1235	
R24	5.6meg 5%		1244	
R25	120K		1224	
R26	910Ω 5%		7266033	①
R27	1200Ω			②②
R28	47K			②
R29	6800Ω	1	1172	
R30	47K	1	1259	
R31	6800Ω 5%	1	7266367	
R32	47K 5%	1	1220188	
R33	360Ω	5(WW)	7270387	
R34	1800Ω		1204	③
R35	15K	1.	1253	

①Some versions may use 750Ω (Part #7266320) or 820Ω (Part #7266231). Replace with original value
②Part of M8
③Mfgr recommends replacing with 2700Ω 2W (Part #1204) and 5600Ω 1W (Part #1171) connected in parallel.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Delco PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @1.99A	475VCT @.060A		7271233				P-6497		

TRANSFORMER (DRIVER)

ITEM No.	DC RESISTANCE PRI.		REPLACEMENT DATA Delco PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	1800Ω CT		1220902				A-4421			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Delco PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	7900Ω CT	3-4Ω	6063 ①	Z1007	A-2936		A-4432	22S87	S-15X	①Alternate Part #7260855

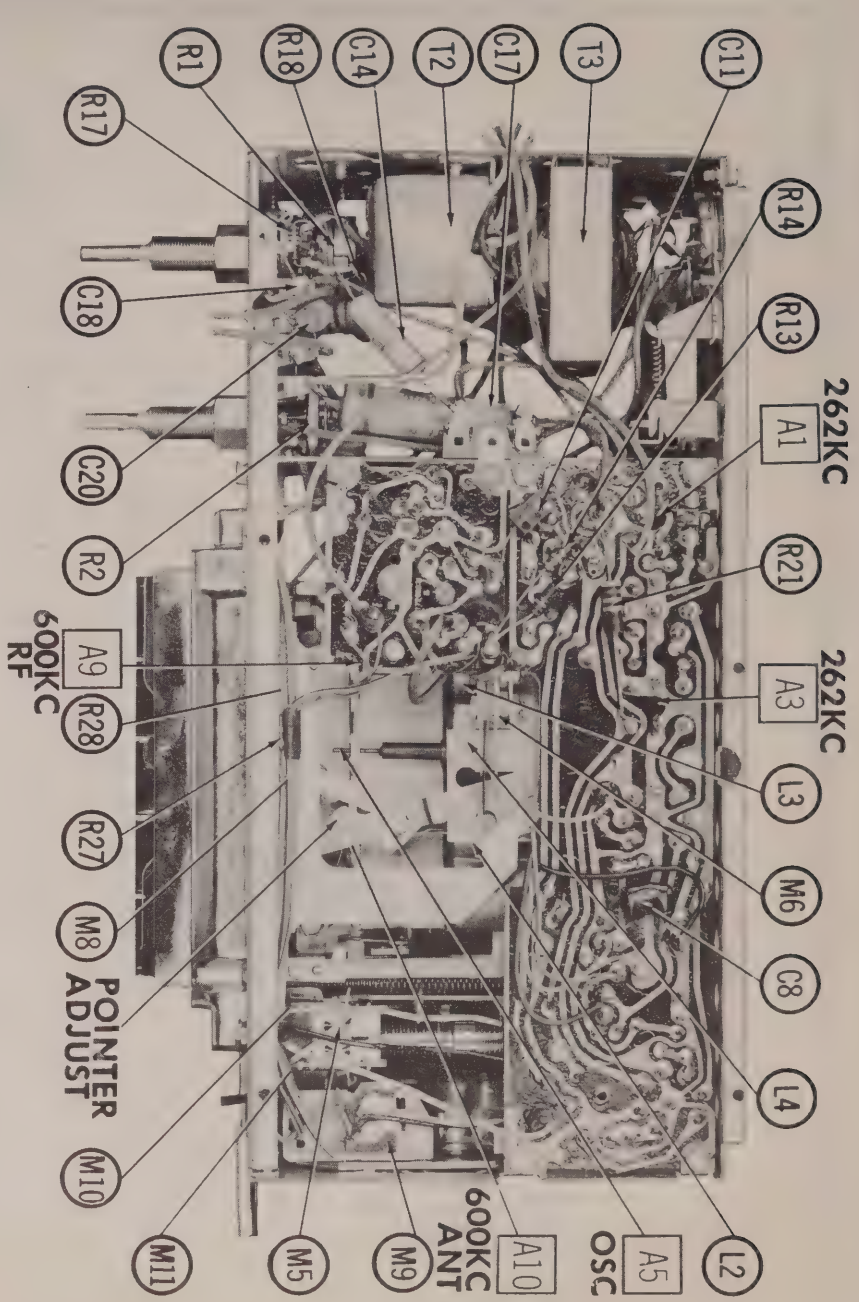
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Delco PART No.	QUAM PART No.	NOTES
SP1	4" x 8"	PM	3-4Ω	7270605 ①		①Alternate Part #7260605
	6" x 9"	PM	3-4Ω	7262245		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Delco PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Ant. Coil	1221138					
L3	RF Coil	1221138					
L4	Osc. Coil	1221139					
L5	Input IF	1220990	16-6756	BC-317	13-PH1		
L6	Output IF	1220992		BC-320	13-PH6		
L7	"A" Lead Choke	1217846					1.4 Microhenry
L8	Fil. Choke	1217846					1.4 Microhenry
L9	Hash Choke	7269090					
L10	Speaker Choke	1217846	19-1001	BC-562	4604		1.4 Microhenry
L11	Speaker Choke	1217846	19-1001	BC-562	4604		1.4 Microhenry

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				Delco PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6 VDC	115∿	8555	6330	G1602/G883	6330	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Delco PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2		7½A 32V	455640					

MISCELLANEOUS

ITEM No.	PART NAME	Delco PART No.	NOTES
M3	Lamp		#1891
M4	Lamp		#1891
M5	Switch	7268030	Power Solenoid, Treadle Solenoid
M6	Switch	7269292	Station Selector
M7	Switch	7271223	Antenna
M8	Switch	7271196	Sensitivity
M9	Tuner Relay	7270546	
M10	Solenoid	1221160	Power
M11	Solenoid	1221161	Treadle
M12	Switch	7264602	Foot
	Belt	7269454	Manual Drive

CABINETS & CABINET PARTS

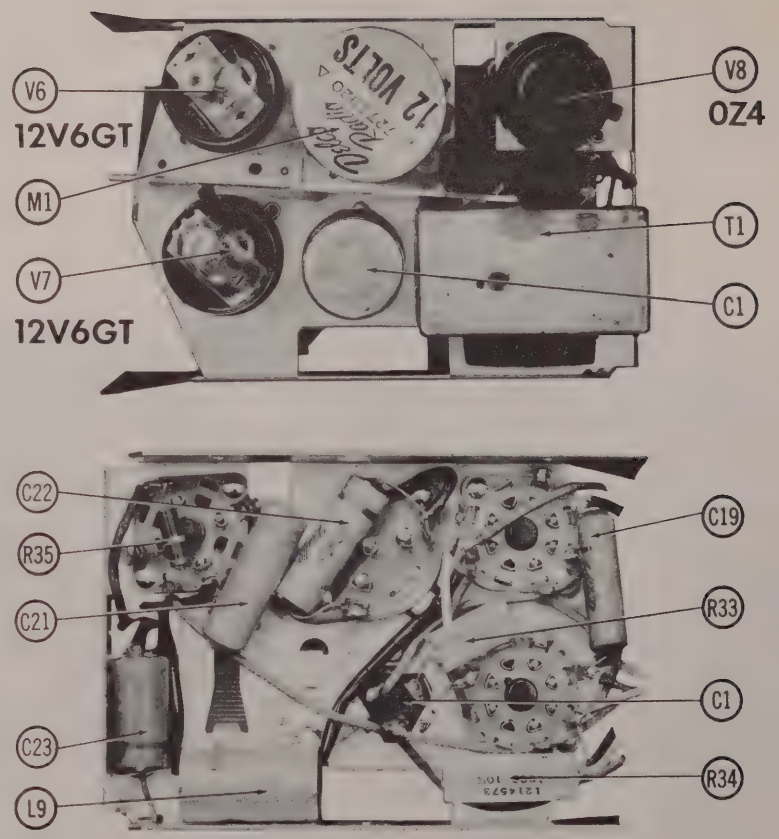
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

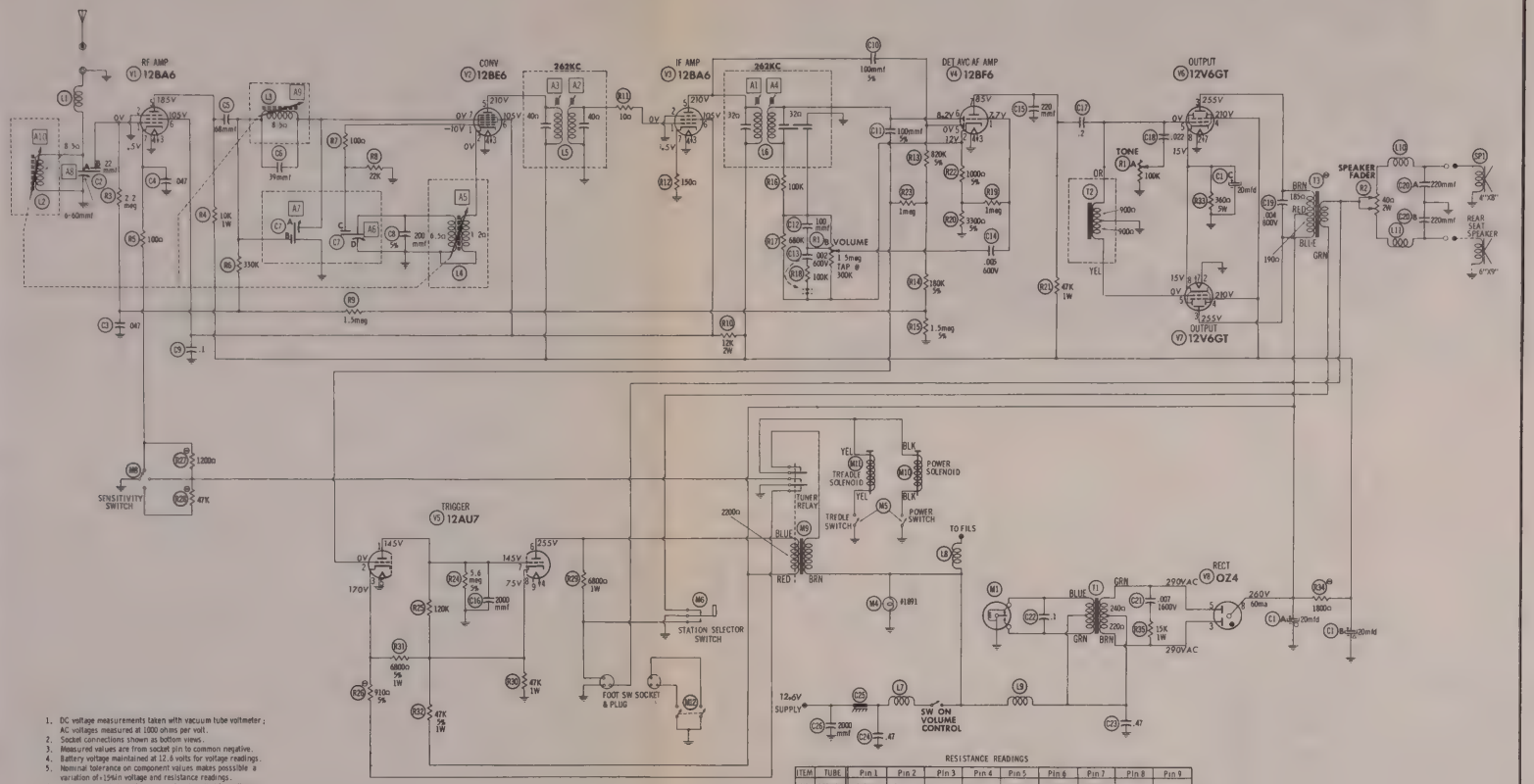
NAME	PART NO.	DESCRIPTION
Knob	1469145	Control
Knob	1469004	Dummy (Series 86 Only)
Knob	1466056	Tone and Speaker
Pushbutton	1220974	Five used (Includes Front Bearing Plate and Slides)
Pointer	7272066	
Dial	7271660	
Dial Window	7269448	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

POWER CHASSIS





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	5.2meg	0Ω	1.1Ω	0Ω	†12K	†14K	1300Ω		
V2	12BE6	22K	1.2Ω	1.1Ω	0Ω	†1800Ω	†14K	3.3meg		
V3	12BA6	50Ω	0Ω	1.1Ω	0Ω	†1800Ω	†14K	150Ω		
V4	12BF6	1meg	4300Ω	1.1Ω	0Ω	2.5meg	500K	†49K		
V5	12AU7	†140K	2.7meg	†50K	1.1Ω	0Ω	†2200Ω	†150K	†45K	.6Ω
V6	12V6GT	NC	0Ω	†185Ω	†1800Ω	900Ω	NC	1.1Ω	360Ω	
V7	12V6GT	NC	0Ω	†190Ω	†1800Ω	900Ω	NC	1.1Ω	360Ω	
V8	OZ4	0Ω	NC	220Ω	NC	240Ω	NC	TP	20K(MIN)	

† MEASURED FROM PIN 8 OF V8
NC NO CONNECTION
TP TIE POINT

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COLUMBIA RECORDS
MODEL HF-2

COLUMBIA RECORDS
MODEL HF-2

COLUMBIA RECORDS
MODEL HF-2

TRADE NAME	Columbia Records Model HF-2
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Manual Record Player
TUBES (Four)	Types 6AN8 AF Amp.-Phase Inv., (2) 6V6GT Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .47 Amp. @ 117 Volts AC (46 Watts Less Motor)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H494

PARTS LIST AND DESCRIPTIONS

COLUMBIA RECORDS
MODEL HF-2

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	6AN8	
V2	Output	6V6GT	
V3	Output	6V6GT	
V4	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	11B724	AFH4-17	D0160		TMQ-17	Q-055	R1286 *
B	■20	450							
C	▲5	450							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	330			DI-330	DD-331	L10T33	UC-5333	5GA-T33	
C3	56			DI-56	DD-560	L10Q56	UC-5456	5GA-Q56	①
C4	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C5	100			DI-100	DD-101	L10T1	UC-531	5GA-T1	
C6	100			DI-100	DD-101	L10T1	UC-531	5GA-T1	
C7	220			DI-220	DD-221	L10T22	UC-5322	5GA-T22	①
C8	.25	200		P288N-25		CUB2P25	GEM-2025	2TM-P5	②
C9	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C10	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C11	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C12	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C13	20000			BPD-02	DD-203	BYB6S2		5HK-S2	①
C14	20000			BPD-02	DD-203	BYB6S2		5HK-S2	①

① Not used in some versions. ② Some versions may use .05mfd.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	9B569	BT-80	A47F6-2meg	Q13-139X	UT-449	Volume, Tap @ 500K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	Power On-Off
R2A	1meg	½	9B544	B-70	A47-1meg-Z	Q13-137	U53	Volume Mic
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	½	9B570	B-80	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	3meg	½	9B571	B-84	A47-3meg-S	Q11-140	U59	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

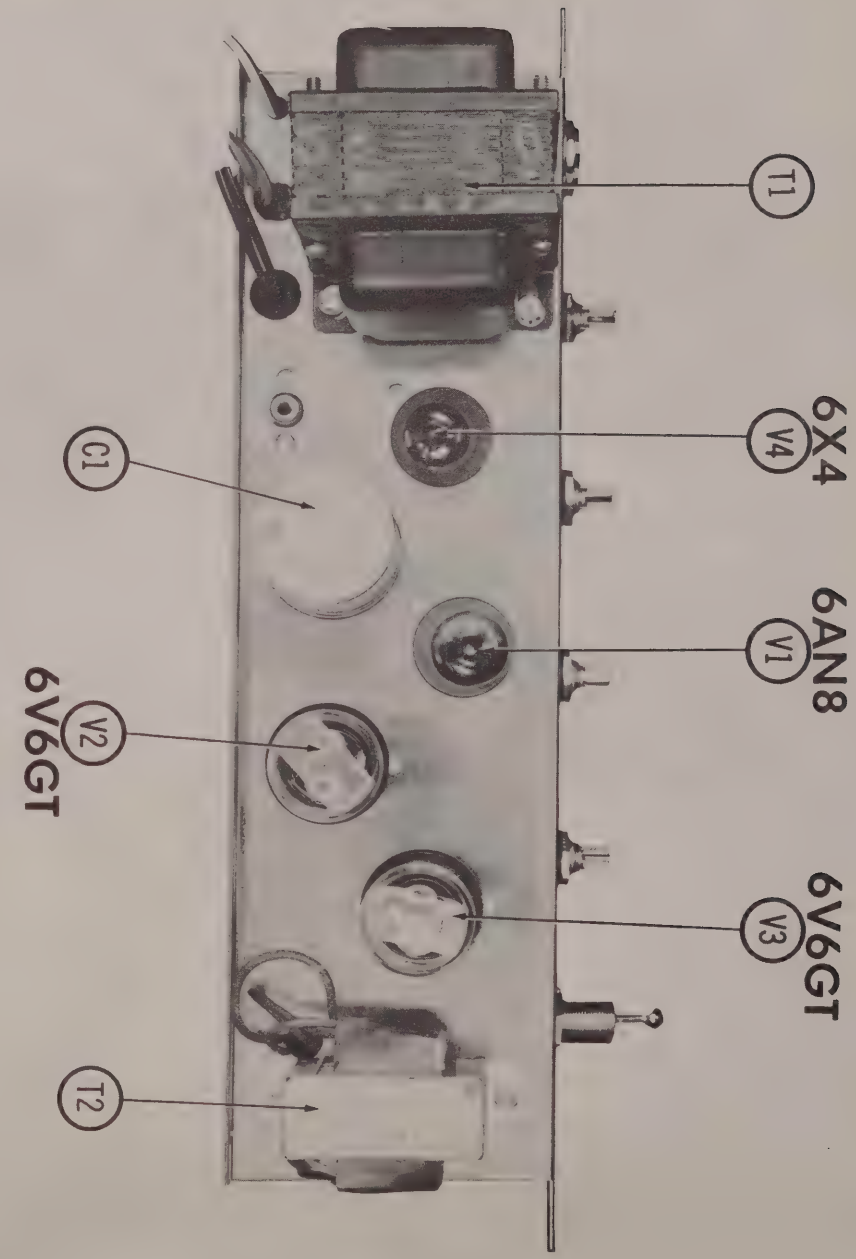
* Use KR with CRL "red label" controls and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R5	82K			
R6	100K			
R7	1meg 5%			
R8	1meg 5%			
R9	270K			
R10	1meg			
R11	1000Ω			
R12	47K			
R13	470K			
R14	47K			
R15	1200Ω			
R16	47K			
R17	470K			
R18	270Ω	3WW	16B-413	
R19	470K			
R20	6800Ω	1		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓖ .47A	580VCT ⓖ .075A	6.3V ⓖ 2A	TR-130 ①	P9304			P-8175		R-9A

① Alternate Part #2B106

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5100Ω CT	6-8Ω	TR-129 ①	Z1402		AU-609 ②	A-3852	24S64	S-55Z	

① Alternate Part #3B220 ② Drill new mounting holes

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	SP811 ①	8A31	① Alternate Part #1B111
SP2	8"	PM	3-4Ω	SP811 ①	8A31	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Columbia Records PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	TO-284-OVSH	422-TS	N8-1 & N8-3	56	PT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Columbia Records PART No.	JENSEN PART No.	WALCO PART No.	
M2	(78RPM)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	† Jewel ♦ Diamond
	(L. P.)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M3	Lamp		#47
M4	Switch	19B589	Motor On-Off (SPST, Toggle Type)
	Motor	6B310	Alliance, Four-Speed

CABINETS & CABINET PARTS

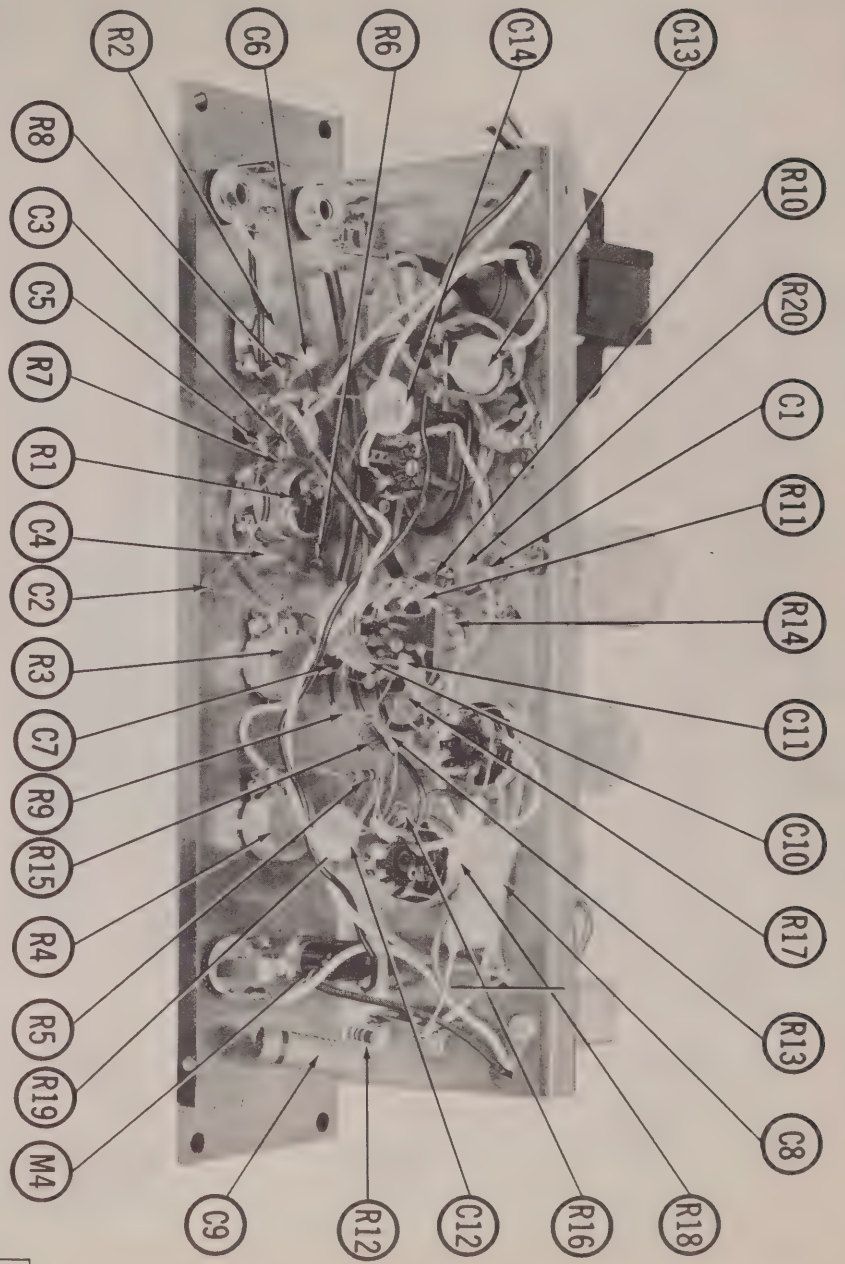
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

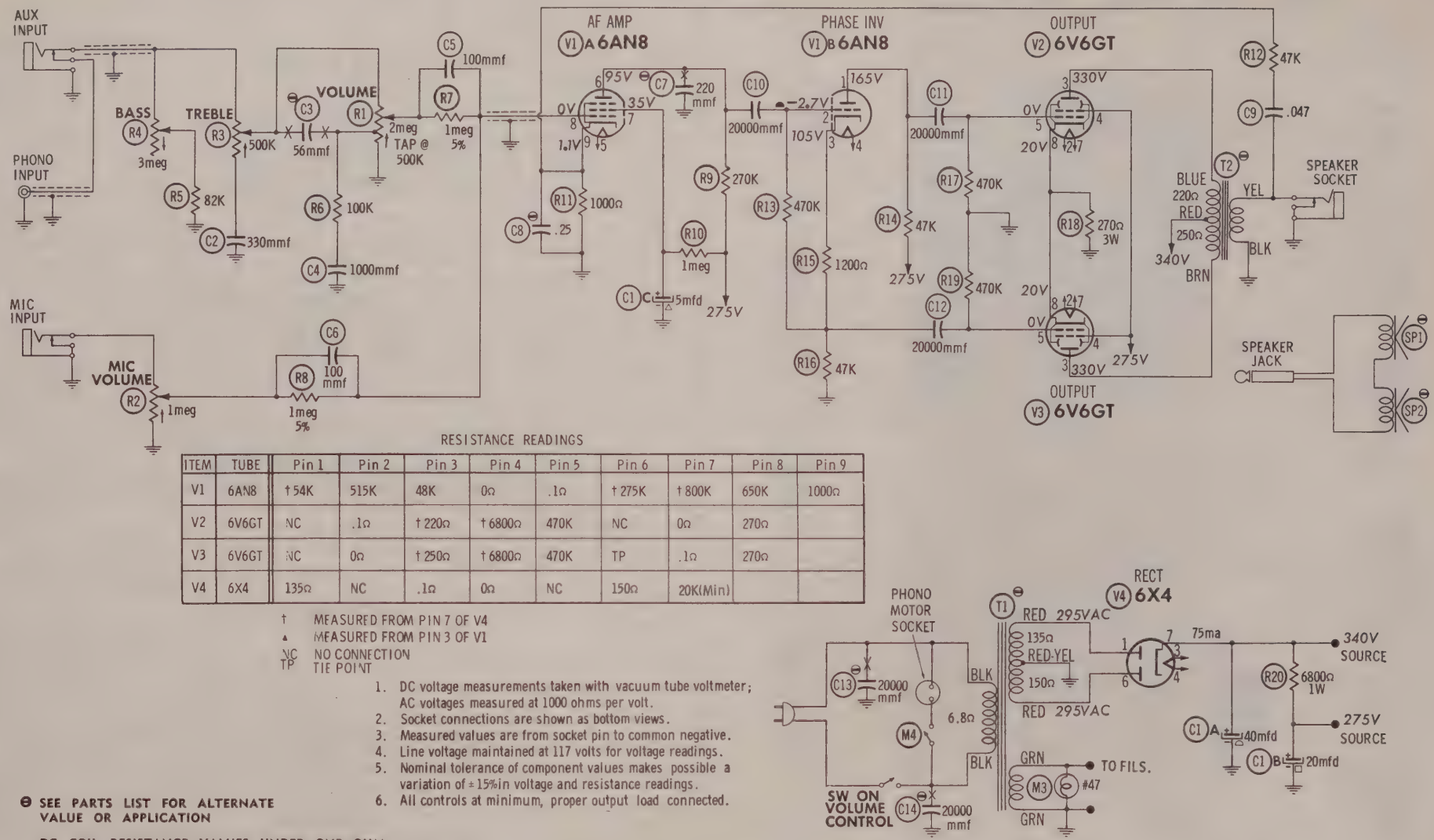
NAME	PART NO.	DESCRIPTION
Knob	8B482	Mic. Volume, On-Off-Volume, Treble, Bass
Cabinet	17B978	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AN8	†54K	515K	48K	0Ω	.1Ω	†275K	†800K	650K	1000Ω
V2	6V6GT	NC	.1Ω	†220Ω	†6800Ω	470K	NC	0Ω	270Ω	
V3	6V6GT	NC	0Ω	†250Ω	†6800Ω	470K	TP	.1Ω	270Ω	
V4	6X4	135Ω	NC	.1Ω	0Ω	NC	150Ω	20K(Min)		

† MEASURED FROM PIN 7 OF V4
▲ MEASURED FROM PIN 3 OF V1
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GENERAL ELECTRIC MODELS P-735A, P-736A

GENERAL ELECTRIC MODELS P-735A, P-736A

MODEL P-735A

GENERAL ELECTRIC MODELS P-735A, P-736A

TRADE NAME	General Electric Models P-735A, P-736A
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St., Utica, N.Y.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 90 Volts "B" Supply
RATING	.13 Amp. @ 117 Volts AC (or) 49MA @ 7.5 Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 6 (grid) of 1R5 V1). Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

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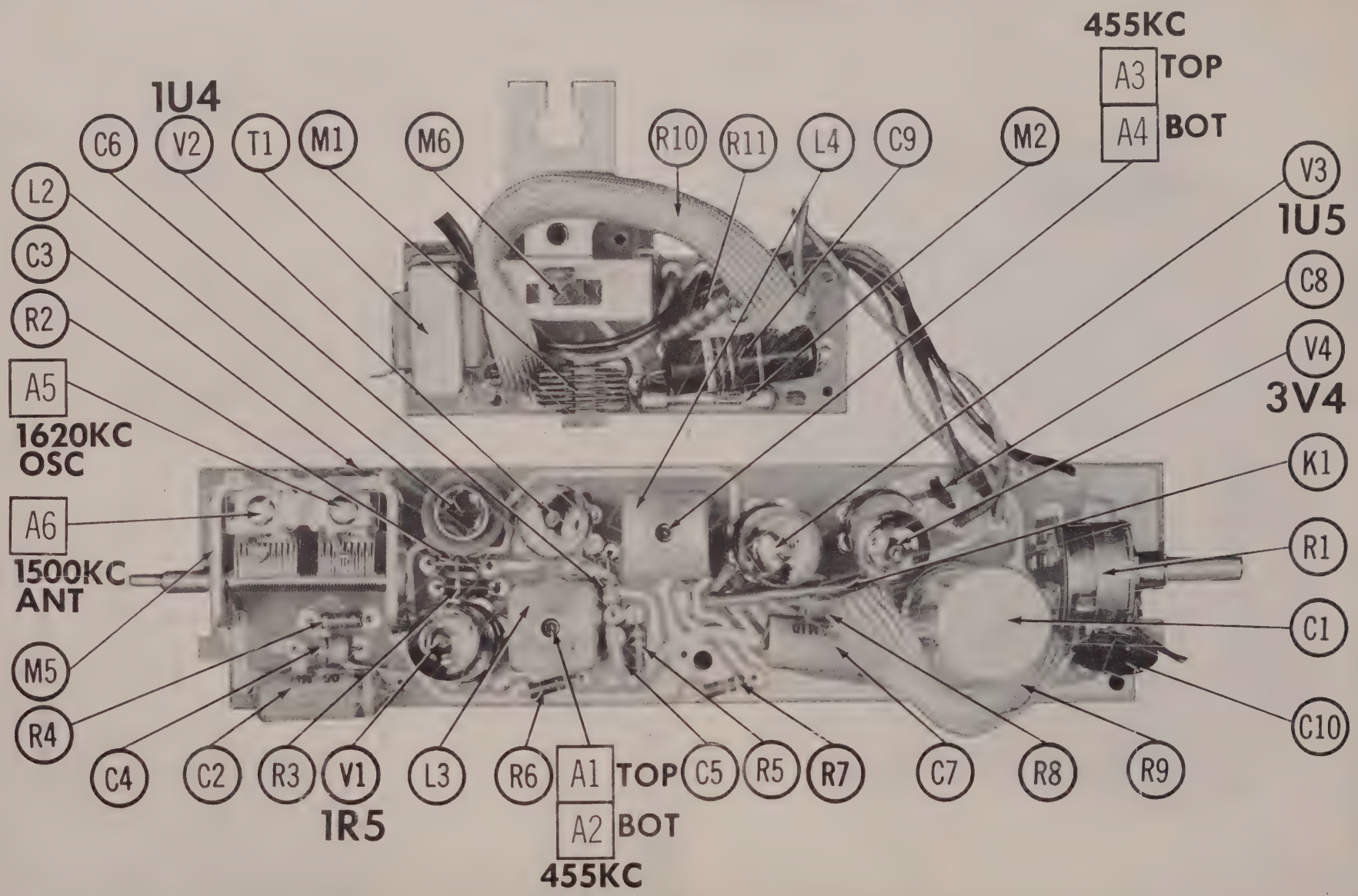
H540

SET 411 FOLDER 9



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det.-AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	G.E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■90	150	RCE-230		BBRT44415	PFP302.75		FMD-303	R2595 *
B	▲40	150			BR5001			MTH-1250	
C	40	10							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	G.E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C3	5000		RCW-3014	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C4	47			SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C5	3000		RCW-3118	BPD-003	DD-302	BYA10D3	UC-523	5GA-D3	
C6	2.7								
C7	.22	100				CUB2P22	GEM-2022	2TM-P22	Note 1
C8	2000		RCW-3119	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C9	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C10	10000	100	RCW-3250	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	

Note 1. Some versions may use .33mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	G.E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	RRC-367					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	G.E. PART No.	NOTES
R2	15K			
R3	100K			
R4	220Ω			
R5	3.3meg			
R6	6.8meg			
R7	3.3meg			
R8	2200Ω			
R9	2450Ω	10	RRW-144	
R10	68Ω	4	RRW-143	
R11	2200Ω	1		

COILS (RF-IF)

ITEM No.	USE	G.E. PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	RLL-069					
L2	Osc. Coil	RLC-139					
L3	Input IF	RTL-193	16-6780	BC-356	13-PC7	RF-4	
L4	Output IF	RTL-193	16-6780	BC-357	13-PC8	RF-4	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	G.E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	11.6K	3-4Ω	RTO-186 (K115J34-1)		A-2927		A-3329①	24S84	S-11Z	① Use original channel frame.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	G.E. PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	ROP-036 (67IC208)	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G.E. PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	150mmf, 150mmf, 2000mmf, 5000mmf, 10000mmf, 1meg, 3.3meg, 4.7meg, 10meg	REK-010	Centralab PC-328

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	G.E. PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.058A	RER-020	1234AH	RS065Q	65	

FUSES

ITEM No.	TYPE	RATING	G.E. PART No. FUSE	G.E. PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	2/10A 250V S/B	REF-026		315.200 (2/10A-125V-S/B)		MDV 2/10	

BATTERIES

ITEM No.	VOLTAGE	G.E. PART No.	BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M3	7.5V		C5		717		M9		
M4	90V			P60		479		M214	

MISCELLANEOUS

ITEM No.	PART NAME	G.E. PART No.	NOTES
M5	Tuning Cap.	RS-1247	2 Gang (Ant. 22-300mmf)
M6	Switch	RSW-114	AC-DC, Slide Type
	Printed Board	E265651	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

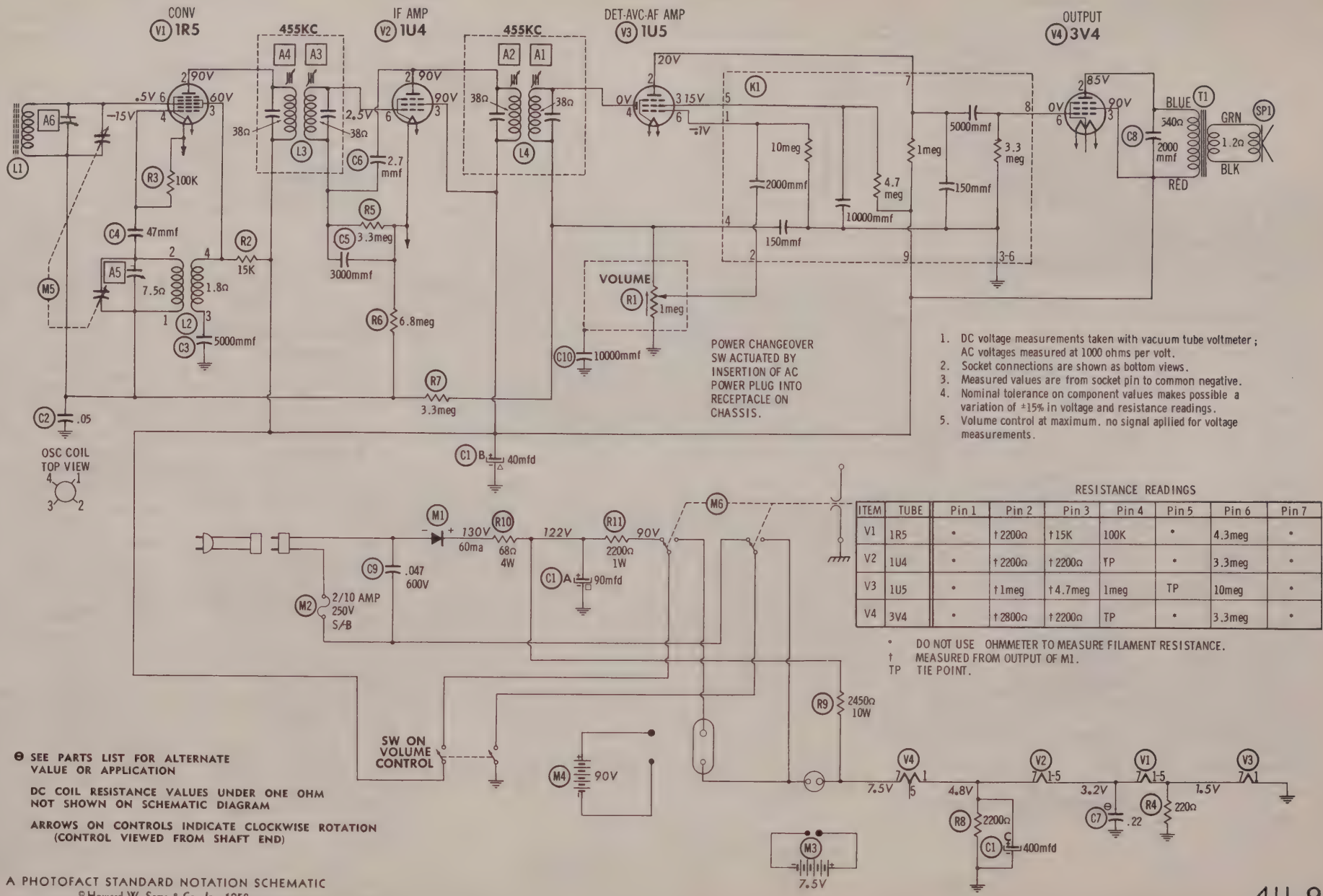
NAME	PART NO.	DESCRIPTION
Knob	RS-1240	Tuning (Outer) Model P-735A
Knob	RS-1241	Tuning (Outer) Model P-736A
Knob	RS-1242	Volume, Model P-735A
Knob	RS-1243	Volume, Model P-736A
Knob	RS-1244	Tuning, Vernier (Inner) Model P-735A
Knob	RS-1245	Tuning, Vernier (Inner) Model P-736A
Cabinet Ass'y.	RB-1047	Model P-735A
Cabinet Ass'y.	RB-1048	Model P-736A
Handle	RS-1233	Includes Bail, Model P-735A
Handle	RS-1234	Includes Bail, Model P-736A
Catch	RS-1237	Cabinet Front

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

FOLDER 9
GENERAL ELECTRIC MODEL P-735A



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†2200Ω	†15K	100K	•	4.3meg	•
V2	1U4	•	†2200Ω	†2200Ω	TP	•	3.3meg	•
V3	1U5	•	†1meg	†4.7meg	1meg	TP	10meg	•
V4	3V4	•	†2800Ω	†2200Ω	TP	•	3.3meg	•

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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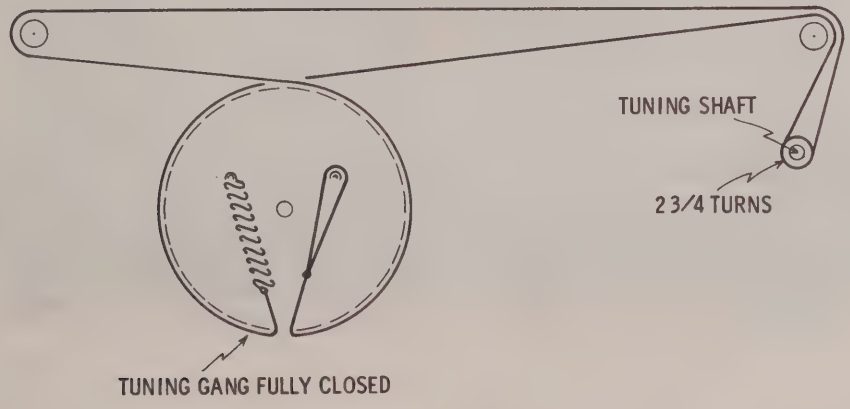
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

KNIGHT MODEL KN-200 (92SZ405)

KNIGHT MODEL KN-200 (92SZ405)

KNIGHT MODEL KN-200 (92SZ405)

TRADE NAME	Knight Model KN-200 (92SZ405)		
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois		
TYPE SET	AC Operated FM AM Tuner		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.42 Amp. @ 117 Volts AC (44 Watts)
TUNING RANGE—BROADCAST	535 - 1620KC	FREQ. MOD.	88 - 108MC



DIAL CORD STRINGING

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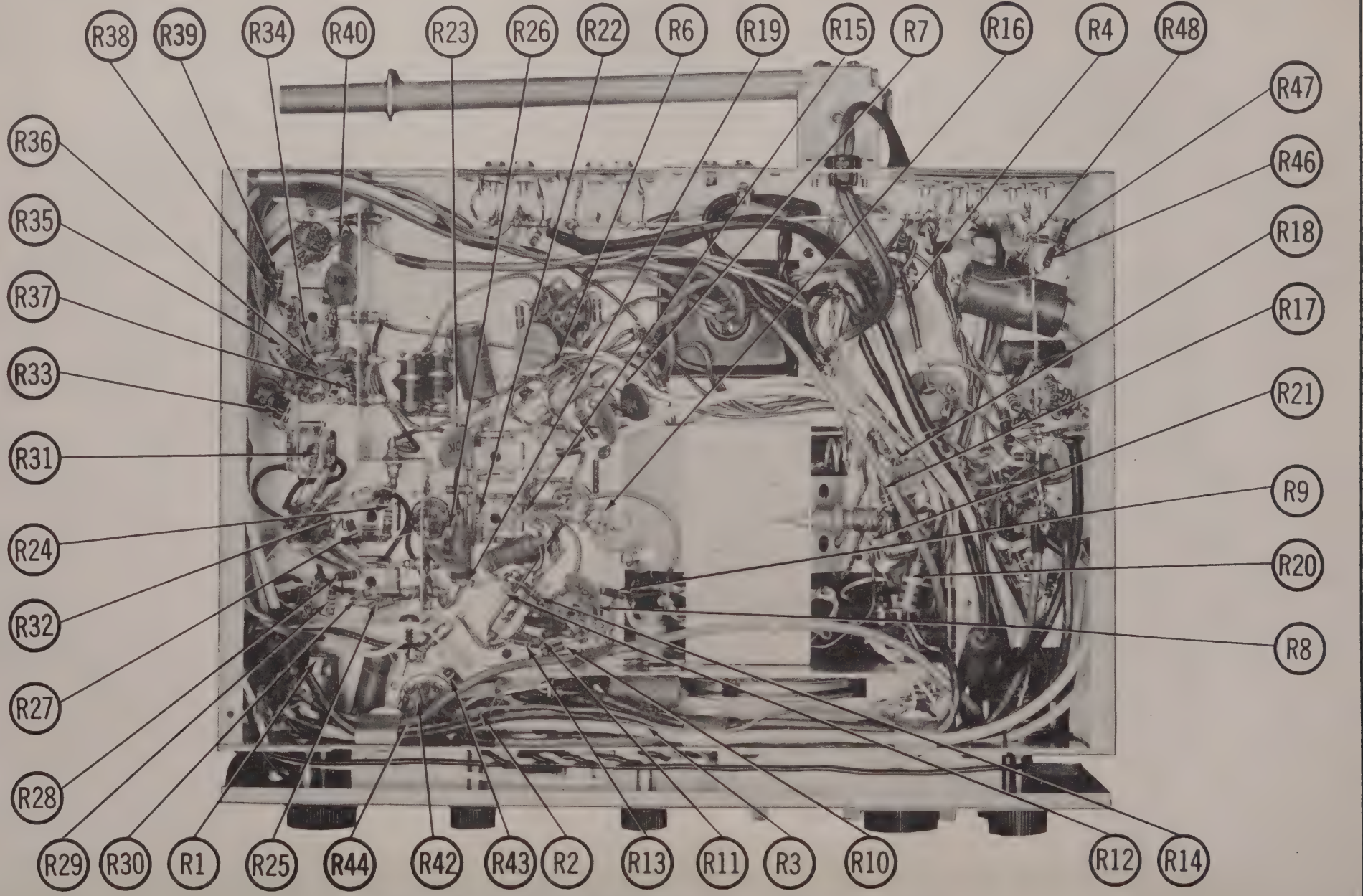
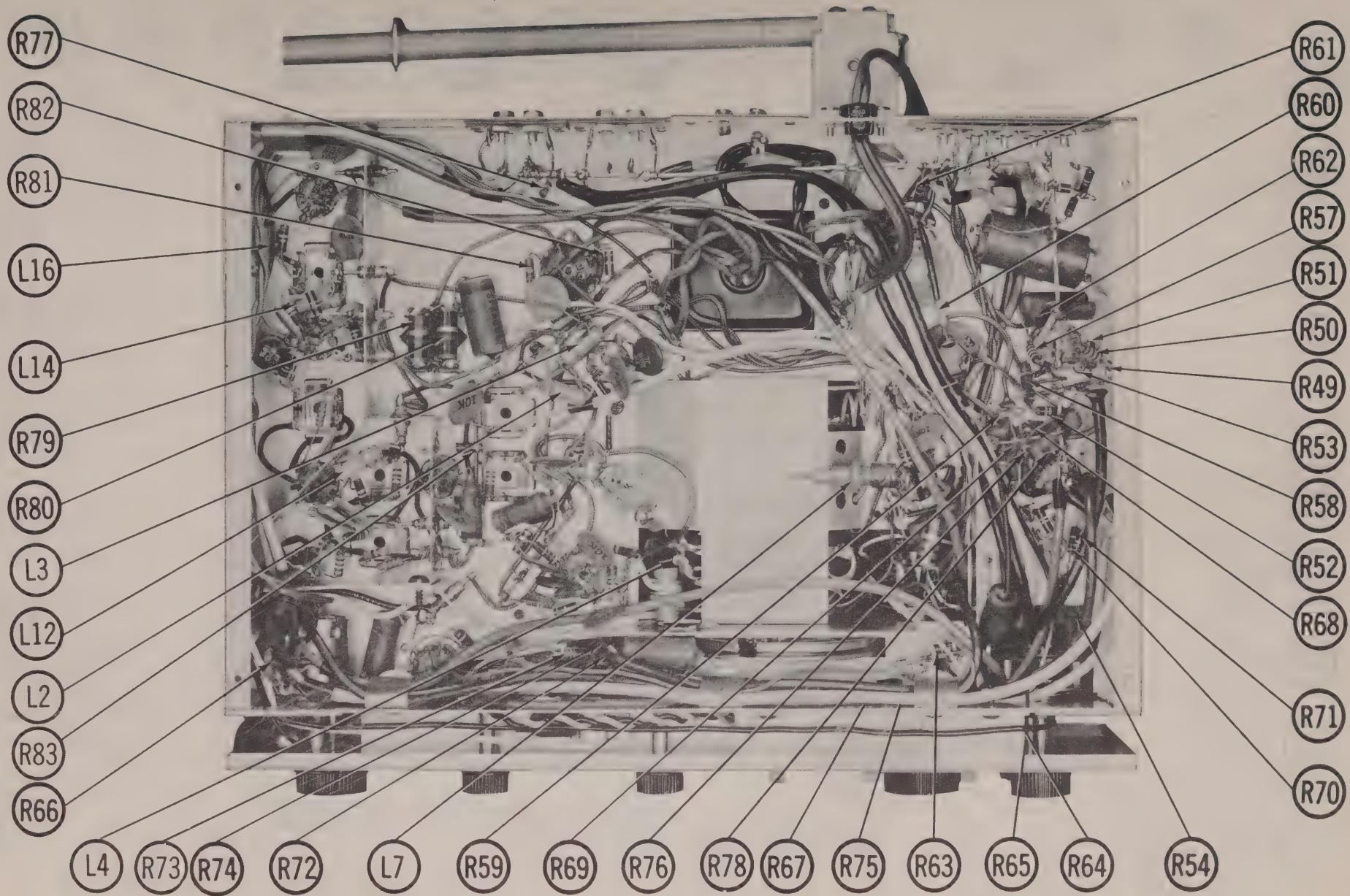
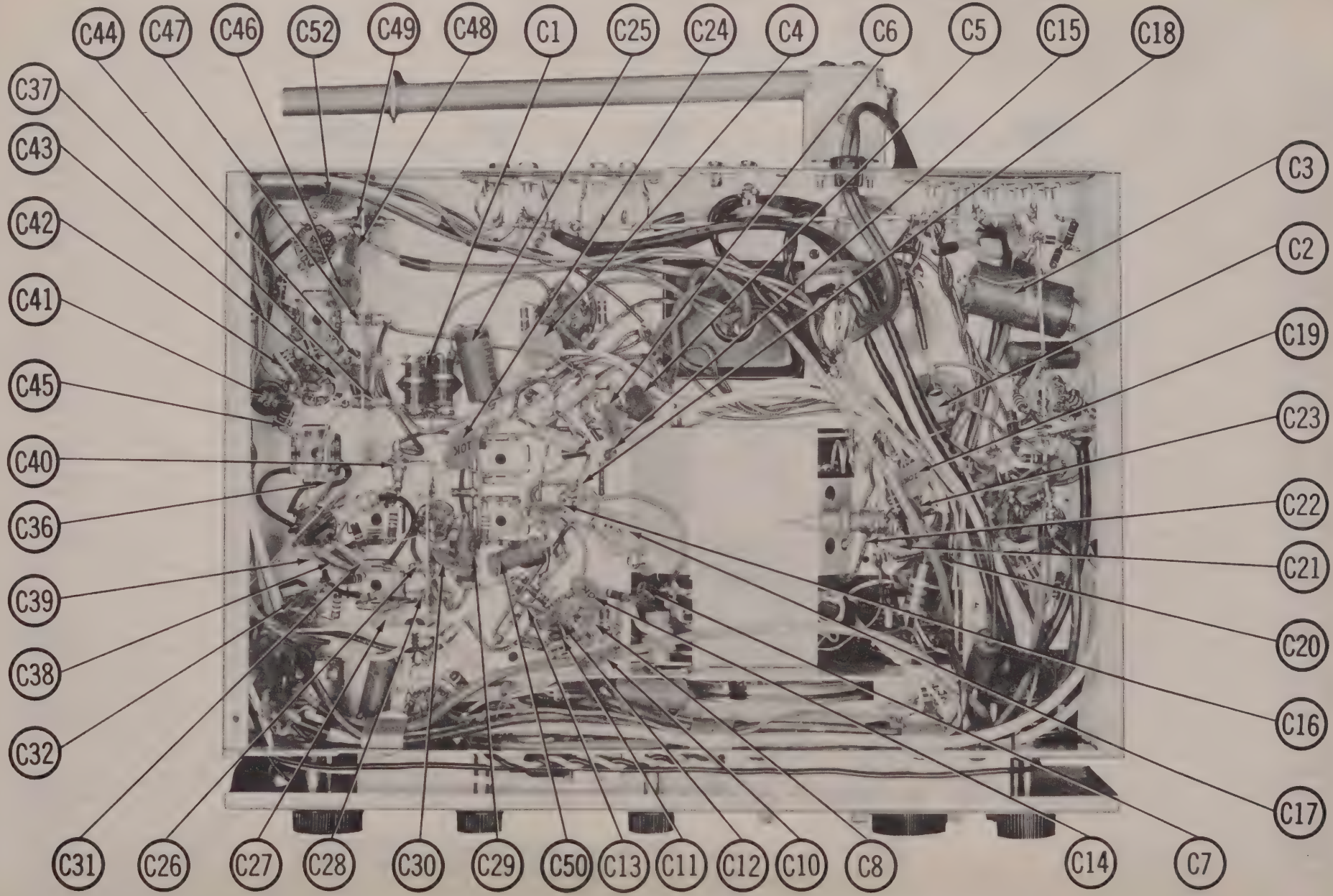
SET 411 FOLDER 10



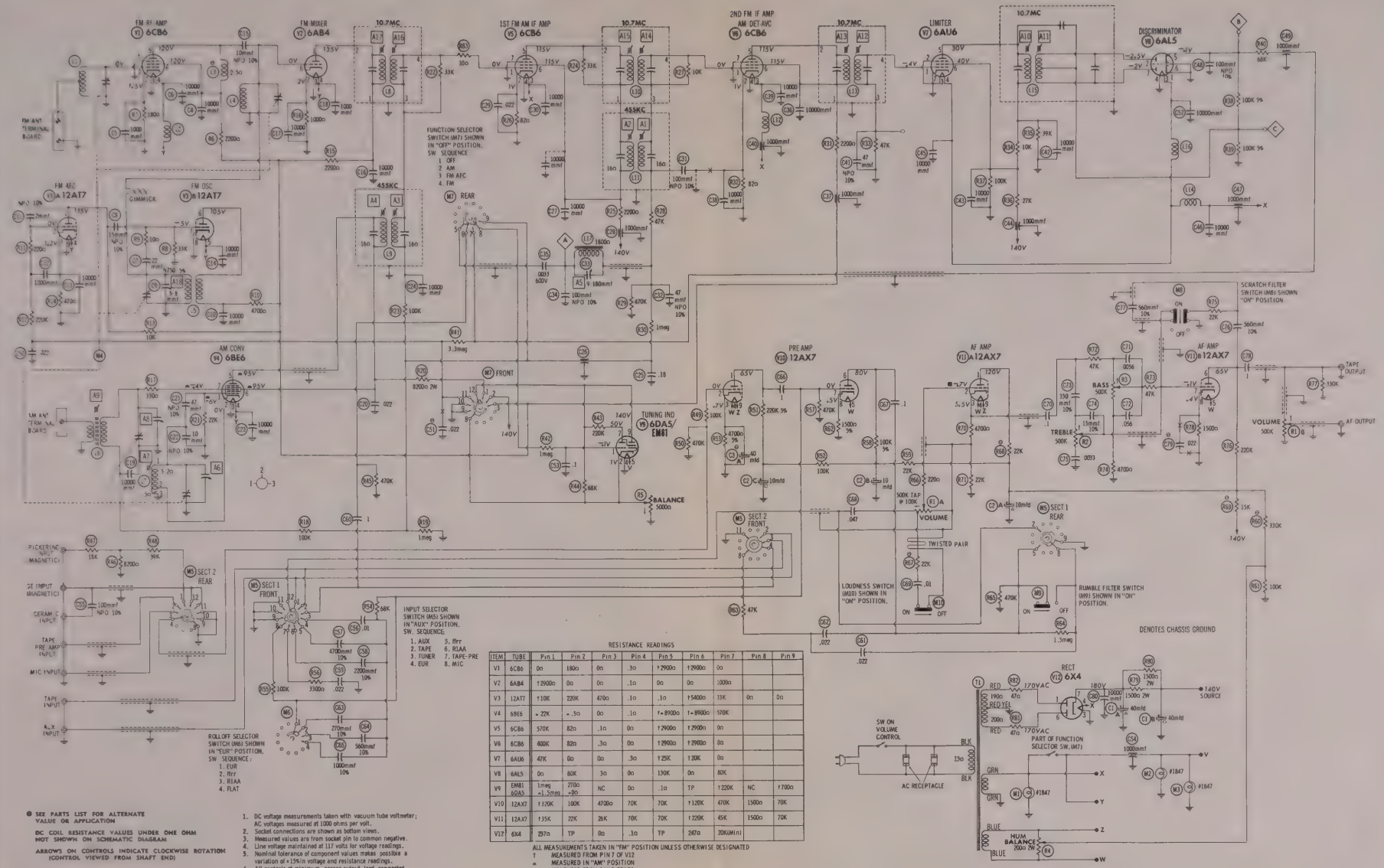
CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	0Ω	180Ω	0Ω	.3Ω	†2900Ω	†2900Ω	0Ω		
V2	6AB4	†2900Ω	0Ω	0Ω	.1Ω	0Ω	0Ω	1000Ω		
V3	12AT7	†10K	220K	470Ω	.1Ω	.1Ω	†5400Ω	33K	0Ω	0Ω
V4	6BE6	÷ 22K	÷.5Ω	0Ω	.1Ω	†÷8900Ω	†÷8900Ω	570K		
V5	6CB6	570K	82Ω	.1Ω	0Ω	†2900Ω	†2900Ω	0Ω		
V6	6CB6	400K	82Ω	.3Ω	0Ω	†2900Ω	†2900Ω	0Ω		
V7	6AU6	47K	0Ω	0Ω	.3Ω	†25K	†20K	0Ω		
V8	6AL5	0Ω	80K	3Ω	0Ω	130K	0Ω	80K		
V9	EM81 6DA5	1meg ÷1.3meg	270Ω ÷80	NC	0Ω	.1Ω	TP	†220K	NC	†700Ω
V10	12AX7	†320K	100K	4700Ω	70K	70K	†120K	470K	1500Ω	70K
V11	12AX7	†35K	22K	26K	70K	70K	†220K	45K	1500Ω	70K
V12	6X4	257Ω	TP	0Ω	.1Ω	TP	247Ω	20K(Min)		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 7 OF V12
÷ MEASURED IN "AM" POSITION
⊖ MEASURED FROM PIN 3 OF V11
NC NO CONNECTION
TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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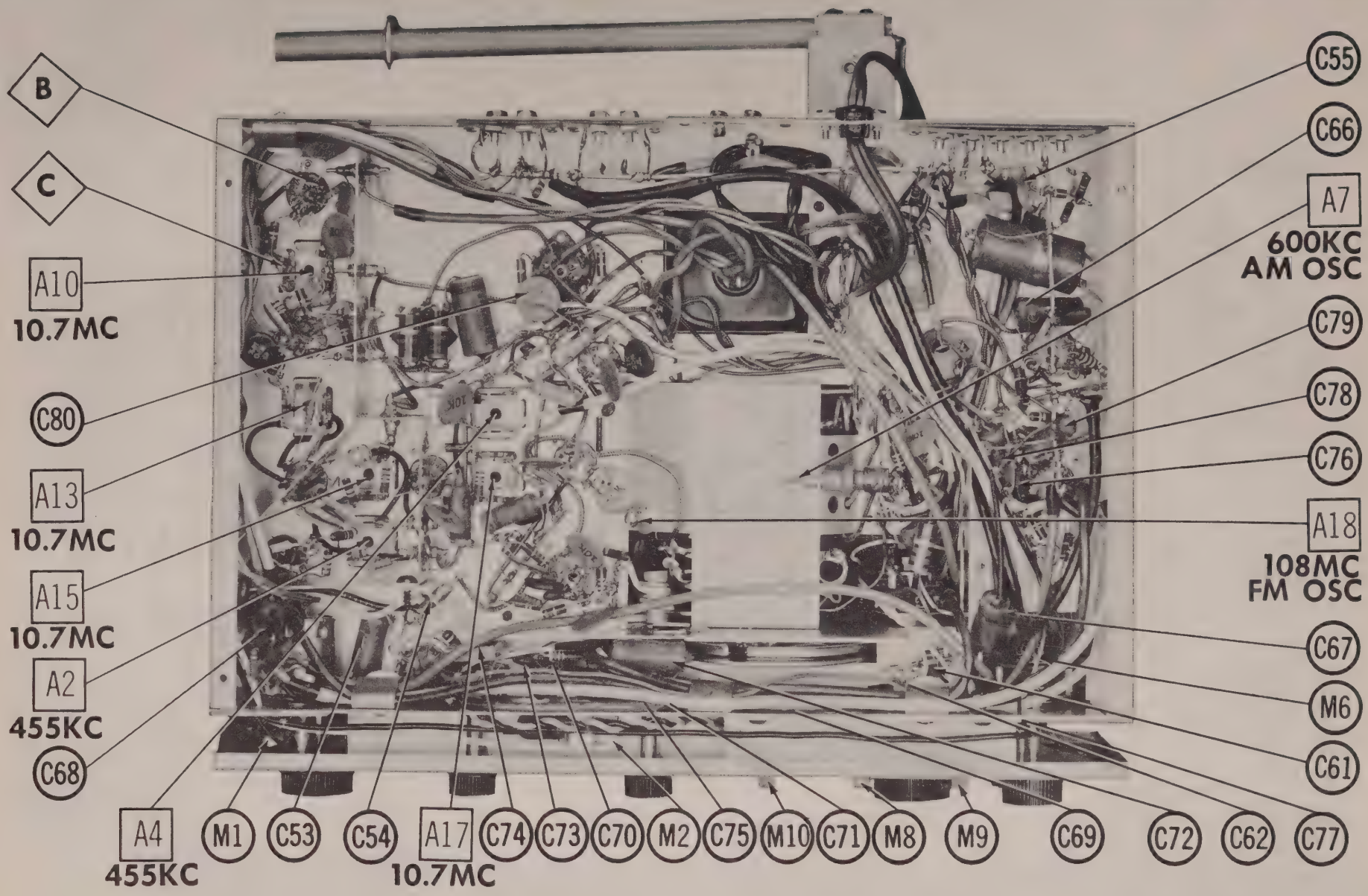


CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISCELLANEOUS IDENTIFICATION

KNIGHT
MODEL KN-200 (92SZ405)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to AM antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	"	455KC (10KC Mod)	"	"	"	A5	Adjust for MINIMUM deflection
3.		Loop	1600KC (400∿ Mod)	"	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	"	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 3 and 4.
5.		"	1400KC	"	Tune to 1400KC signal	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
6.		"	1000KC	"	Tune to 1000KC signal	"	A9	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01mfd	High side to pin 1 (grid) of 6AU6 (V7). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A10	Adjust for maximum deflection.
8.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
9.	"	High side to pin 6 (grid) of 6AB4 (V2). Low side to chassis.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01mfd	High side to pin 1 (grid) of 6AU6 (V7). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A10	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A11	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of cross-over lines.
9.	"	High side to pin 6 (grid) of 6AB4 (V2). Low side to chassis	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A12, A13, A14, A15, A16, A17	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.

FM RF ALIGNMENT

Steps 12 and 13 are not necessary unless tuner fails to track properly.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC	FM	108MC	DC probe to point Ⓑ. Common to chassis.	A18	Adjust for maximum deflection.
11.	"	"	106MC	"	106MC	"	L4, L1	Adjust L4, L1 by compressing or expanding coil turns for maximum deflection.
12.	"	"	"	"	"	"		Adjust for maximum deflection by bending FM RF rotor plates. Recheck L4 and L1.
13.	"	"	88MC	"	88MC	"	L5	Adjust L5 by compressing or expanding coil turns for maximum deflection while rocking tuning gang through 88MC signal.

FIG. 1

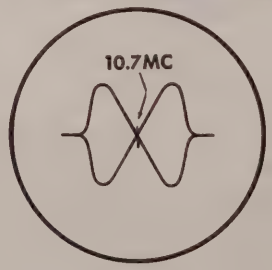
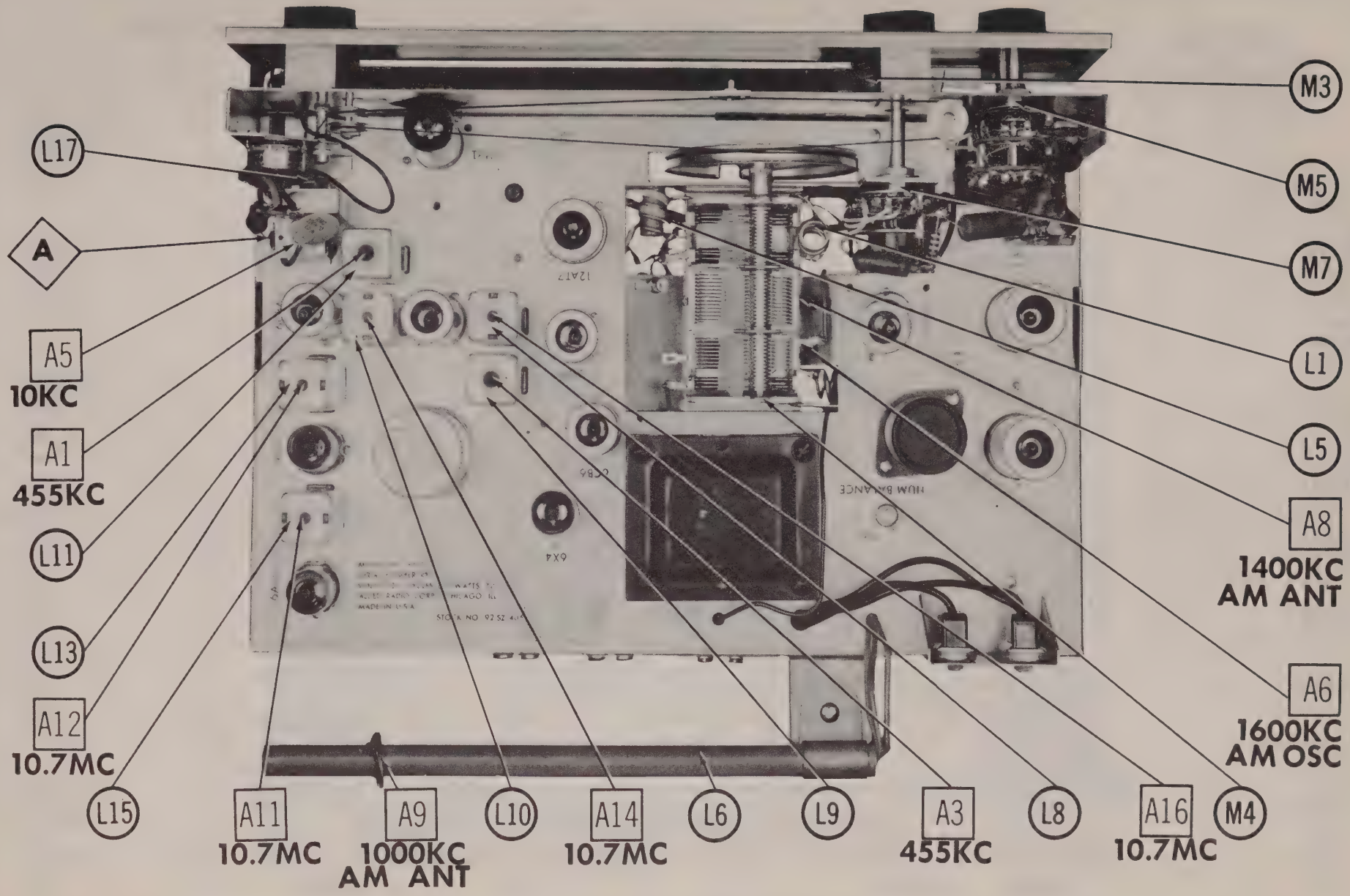
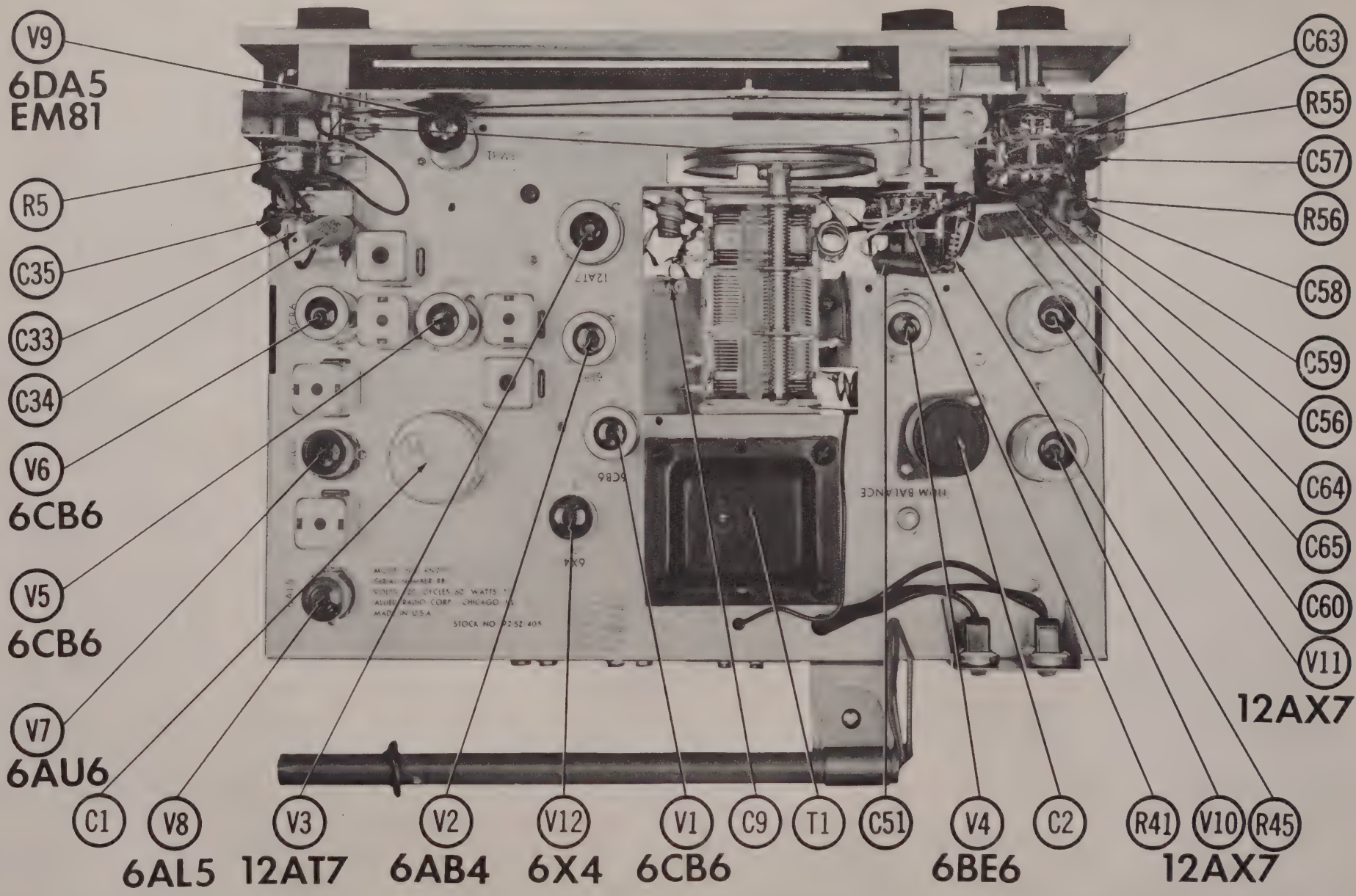


FIG. 2



CHASSIS TOP VIEW - ALIGNMENT, INDUCTOR & MISCELLANEOUS IDENTIFICATION



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6CB6	
V2	FM Mixer	6AB4	
V3	FM Osc. - FM AFC	12AT7	
V4	AM Converter	6BE6	
V5	1st FM AM IF Amplifier	6CB6	
V6	2nd FM IF Amplifier - AM Det. - AVC	6CB6	

ITEM No.	USE	TYPE	NOTES
V7	FM Limiter	6AU6	
V8	Discriminator	6AL5	
V9	Tuning Indicator	EM81/6DA5	
V10	Preamplifier	12AX7	
V11	AF Amplifier	12AX7	
V12	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300		AFH2-33	B0260	FP217. 87	TMD-31	D-130	TVL-2575
B	▲40	300							
C2A	▲10	150		AFH3-22	C0210	FP330. 5	TMT-22	T-095	TVL-3432. 8
B	10	150							
C	■10	150							
C3A	40	25		PRS150V4040	BBRD4415	TCD48	TDLD-7	FMD-1540	TVA-2445
B	40	25	①						

① C3B is not used.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C5	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C6	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C7	22				DTN-22				N750 5%
C8	15			NPO-SI 15	DTZ-15	C10Q15C		5TCC-Q15	NPO 10%
C9	.5-8								
C10	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	2								NPO 10%
C12	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C14	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C15	10			NPO-SI 10	DTZ-10	C10Q1C	ZT-541	5TCC-Q1	NPO 10%
C16	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C17	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C19	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C20	.022	200		P288N-022	DD-203	CUB-4S22	GEM-4122	2TM-S22	
C21	47			NPO-SI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO 10%
C22	10			NPO-SI 10	DTZ-10	C10Q1C	ZT-541	5TCC-Q1	NPO 10%
C23	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-D1	
C24	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-D1	
C25	.18	200							
C26	1000			EF-001	MFT-1000			503C-D1	
C27	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-D1	
C28	1000			EF-001	MFT-1000			503C-D1	
C29	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C30	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C31	100			NPO-SI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO 10%
C32	47			NPO-SI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO 10%
C33	9-180								
C34	100			NPO-SI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO 10%
C35	.0033	600		P688N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C36	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C37	1000			EF-001	MFT-1000			503C-D1	
C38	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C39	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C40	1000			EF-001	MFT-1000			503C-D1	
C41	47			NPO-SI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO 10%
C42	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C43	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C44	1000			EF-001	MFT-1000			503C-D1	
C45	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C46	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C47	1000			EF-001	MFT-1000			503C-D1	
C48	100			NPO-SI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO 10%
C49	1000			EF-001	MFT-1000			503C-D1	
C50	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C51	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	①
C52	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C53	.1	200		P288N-1	DD-104	CUB2P1	GEM-201	2TM-P1	
C54	1000			EF-001	MFT-1000			503C-D1	
C55	100			NPO-SI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO 10%
C56	.01	200		P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C57	4700								10%
C58	2200								10%
C59	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C60	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C61	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C62	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C63	270			NPO-SI 270	MD-271	L10T27		5TCC-T27	10%
C64	560				MD-561				10%
C65	1000								10%
C66	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C67	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C68	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C69	.01	200		P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C70	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C71	.0056	200			D6-562		GEM-16256		
C72	.056	200					GEM-6156		
C73	330				MD-331	L10T33			10%
C74	15			1469-000015	DD-150	22R5Q15		MS-415	10%
C75	.0033	200		P288N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C76	560				MD-561				10%
C77	560				MD-561				10%
C78	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C79	.022	200		P288N-022		CUB4S22	GEM-4122	2TM-S22	①
C80	10000			BPD-01	DD-103		DC511	5HK-S1	

① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/4	RP-105AF-A			Q13-133X		Volume, Tap @ 100K
B	500K	1/4				M13-133		Volume
C	Switch					76-1		
R2A	500K	1/2	RP-504AN	B-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	1/2	RP-504AN	B-60	A47-500K-Z	Q13-133	U48	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	200Ω	2(WW)	RPW-2011	WN-201	A43-200	WPK200	R250L	Hum Balance
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R5	5000Ω	1/2	RP-502G				PTA53L	EM81 Balance

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R6	2200Ω			
R7	180Ω			
R8	33K			
R9	10Ω			
R10	4700Ω			
R11	220Ω			
R12	220K			
R13	10K			
R14	470Ω			
R15	2200Ω			
R16	1000Ω			
R17	330Ω			
R18	100K			
R19	1meg			
R20	8200Ω	2		
R21	22K			
R22	33K			
R23	100K			
R24	33K			
R25	2200Ω			
R26	82Ω			
R27	10K			
R28	47K			
R29	470K			
R30	1meg			
R31	2200Ω			
R32	82Ω			
R33	47K			
R34	10K			
R35	39K			
R36	27K			
R37	100K			
R38	100K 5%			
R39	100K 5%			
R40	68K			
R41	3.3meg			
R42	1meg			
R43	220K			
R44	68K			

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R45	470K			
R46	8200Ω			
R47	18K			
R48	39K			
R49	100K			
R50	470K			
R51	220K 5%			
R52	100K			
R53	4700Ω 5%			
R54	68K			
R55	100K			
R56	3300Ω			
R57	470K			
R58	100K 5%			
R59	22K			
R60	330K			Note 1
R61	100K			
R62	1500Ω 5%			
R63	47K			
R64	1.5meg			
R65	470K			
R66	220Ω			Note 2
R67	22K			Note 2
R68	22K			
R69	15K			Note 3
R70	4700Ω			
R71	22K			
R72	47K			
R73	47K			
R74	4700Ω			
R75	22K			
R76	220K			
R77	330K			
R78	1500Ω			
R79	1500Ω	2		
R80	1500Ω	2		
R81	47Ω			
R82	47Ω			
R83	10Ω			

Note 1. Some versions use 220K in this application.
Note 2. Not used in some versions.
Note 3. Some versions use 39K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA KNIGHT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	LL-0061					
L2	Fil. Choke		19-1007	BC-560	4590		.68 Microhenry ①
L3	RF Choke						3.3 Microhenries ①
L4	FM Mixer Coil	LL-0060					
L5	FM Osc. Coil	LL-0062					
L6	Loop Stick	LW-0109					
L7	AM Osc. Coil	LL-0059		BC-393 *			* Disregard capacity winding
L8	1st FM IF	LK-0032	16-3487	FM-254	1463		
L9	1st AM IF	LR-0041	16-6770	BC-352	12-C1	RF-1	
L10	2nd FM IF	LR-0033	16-3487	FM-254	1463		
L11	2nd AM IF	LR-0041	16-6770	BC-353	12-C2	RF-2	
L12	Fil. Choke		19-1007	BC-560	4590		.68 Microhenry ①
L13	3rd FM IF	LR-0033	16-3487	FM-254	1463		
L14	Fil. Choke		19-1007	BC-560	4590		.68 Microhenry ①
L15	Discriminator	LQ-0179	17-3494	FM-253	1464		
L16	Fil. Choke		19-1007	BC-560	4590		.68 Microhenry ①

① IRC Part #CLA

PARTS LIST AND DESCRIPTIONS (Continued)

10KC FILTER

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L17		1800Ω	2.7 Hy.	LC-0232						

TRANSFORMER (POWER)

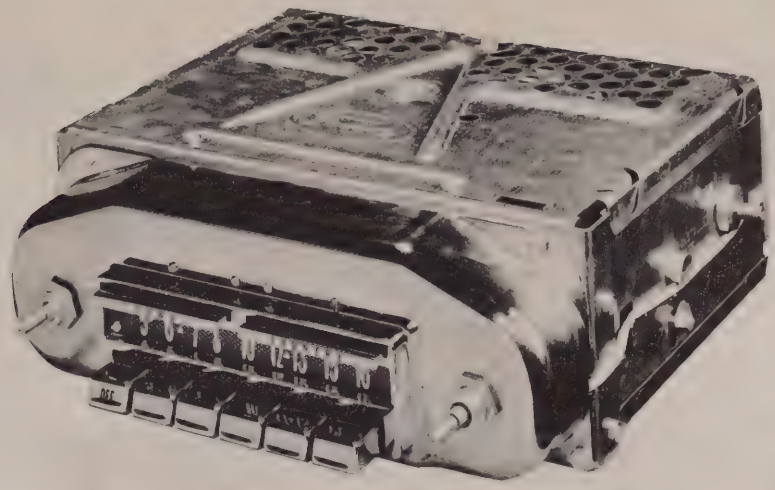
ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	340VCT	6.3V	LP-0267						
	② .42A	② .050A	② 3.4A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V									
	② .61A									

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Lamp		#1847
M2	Lamp		#1847
M3	Lamp		#1847
M4	Tunig Cap.	CV-651	4 Gang (AM Sections: Ant. 12-432mmf, Osc. 8-152mmf)
M5	Switch		Input (2 Section, Rotary Wafer Type)
M6	Switch		Roll-Off (Single Section, Rotary Wafer Type)
M7	Switch		Selector (2 Section, Rotary Wafer Type)
M8	Switch		Scratch Filter (DPDT, Slide Type)
M9	Switch		Rumble Filter (SPST, Slide Type)
M10	Switch		Loudness (SPST, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



TRADE NAME	Mercury Model 85BM (FEW-18805-T) for 1958 Mercury Automobiles
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det-AVC-Relay Cont. -Driver, 12U7 AF Amp. -Trigger.
POWER SUPPLY	12Volt Storage Battery — RATING 1.5 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis	262.5KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4,	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6 A7	"
3.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
	Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores A8, A9, A10 out of coils but not out of coil forms. Repeat Step 2.						
4.	Fig. 1	Thru dummy to antenna receptacle.	1000KC	Carriage 1/2" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 4.
5.	"	"	1000KC @ 3 microvolts.	Tune for 1000KC signal.	"	R3	Adjust for 1.75 volt output (approx. 1W)
6.	"	"	1000KC @ 250 microvolts.	Press Town seek bar.	"	R4	Set R4 counterclockwise. Press Town seek bar. Advance R4 slowly until tuner stops on 1000KC @ 250 microvolts signal.
7.	"	"	1000KC @ 125 microvolts.	"	"		Tuner should not stop on 1000KC @ 125 microvolts signal. If necessary, Repeat Setps 5 and 6.

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull button out, then press in firmly.
3. Repeat for remaining buttons.

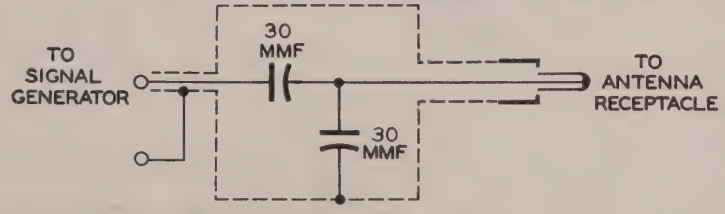


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H602

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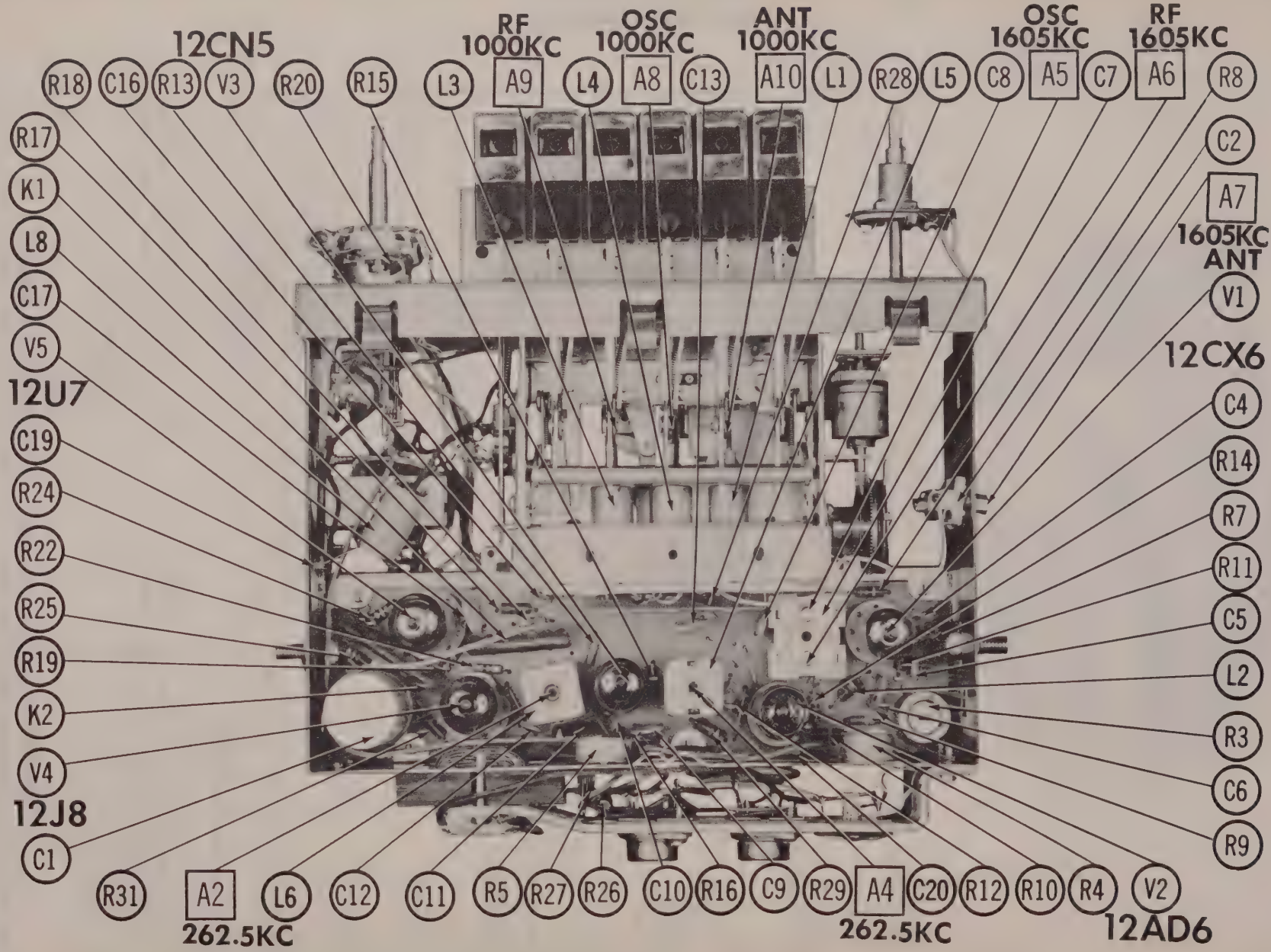
MERCURY MODEL 85BM (FEW-18805-T)

MERCURY MODEL 85BM (FEW-18805-T)

SET 411 FOLDER 11



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	
V2	Converter	12AD6	
V3	IF Amplifier	12CN5	
V4	Det-AVC-Relay Cont. Driver	12J8	
V5	AF Amp-Trigger	12U7	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N401	Output	CBS-2N401			2N350	
X2	2N401	Output	CBS-2N401			2N350	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	250	16	220353-5	AFH3-00-80					R2669*
B	▲250	16							
C	■ 50	16							

* Non-Catalog Item

FIXED CAPACITORS

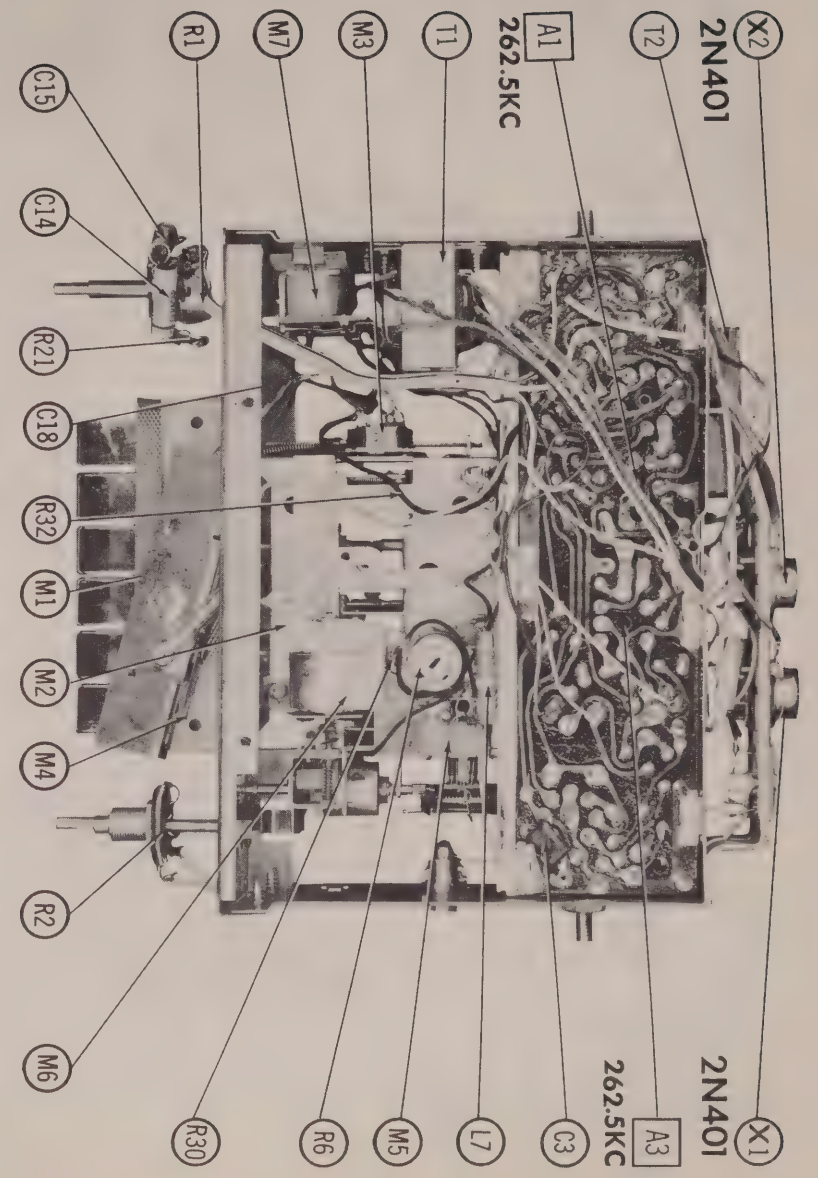
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75		219083-1						
C3	120	300	220348-407	1469-00012	DTZ-120	22R5T12		MS-312	5%
C4	33	500	220332-19	N750-DI33	DTN-33	C10Q33U		5TCU-Q33	N750 10%
C5	1000	100	220332-36	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C6	100	500	220332-14	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C7A	120-450								
B	370-445		219092-2						
C	100								
C8	51	500	220332-16			C10Q51U			N750 10%
C9	390	500	220332-34						N330 10%
C10	2	500	220212-11						5%
C11	.047	200	2090585-9	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C12	100	100	220332-37	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C13	20000	100	220332-24	BPD-02	DD-203	BYA6S2		5HK-S2	
C14	.0018	100	2090059A-182L						10%
C15	.0018	100	2090059A-182L						10%
C16	330	500	220332-25	BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C17	20000	100	220332-24	BPD-02	DD-203	BYA6S2		5HK-S2	
C18	300		220267-12						
C19	300		220267-12						
C20	370		220267-6						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch							Tone
B	2meg	½	219689-4					Volume, Tap @1meg
R2	11.5Ω	1(WW)	219679-1					Speaker Fader
R3	1000Ω	2(WW)	219682-2					Sensitivity
R4	600Ω	2(WW)	219555-14		39-700-200			Town Sensitivity, 150Ω Stop
R5	300Ω	2(WW)	219555-17					Transistor Bias, 100Ω Stop
R6	25Ω	2(WW)	219555-12		39-50			Motor Speed

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BENDIX PART No.	NOTES
R7	680K		220604B-684	
R8	220K		220604B-224	
R9	330Ω		220604B-331	
R10	22meg		220604B-226	
R11	33meg		220604B-336	
R12	47meg		220604B-476	
R13	270Ω		220604B-271	
R14	33K		220604B-333	
R15	330K		220604B-334	
R16	1000Ω		220604B-102	
R17	1.5meg		220604B-155	
R18	4.7meg		220604B-475	
R19	68Ω		220603B-680	
R20	220K		220604B-224	
R21	82K		220604B-823	
R22	10meg		220603B-106	
R23	100K		220604B-104	
R24	180K		220603B-184	
R25	180K		220603B-184	
R26	4.5Ω Cold		220629-1	
R27	10Ω		220604B-100	
R28	470Ω		220604B-471	
R29	470Ω		220604B-471	
R30	220Ω		220604B-221	
R31	22Ω		220604B-220	
R32	0.6Ω		2090438-12	6" Cupron Wire

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	*					
L2	IF Trap Coil	2090088-1					50 microhenries; wound on 18K
L3	RF Coil	*					
L4	Osc. Coil	*					
L5	Input IF	2090239-3					
L6	Output IF	2090237-4					
L7	RF Choke	2090671-1	19-1003	BC-564	4608		3.9 microhenries; IRC Part #CL-1
L8	"A" Lead Choke	216188-12					

* Part of tuner Coil assembly Part #2090131-13

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	7.2	:1CT	2090566-1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3.5 CT	:1	2090554-1							

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA BENDIX PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
	6" x 9"	PM		282634-6		Front Speaker
	6" x 9"	PM		282634-8		Rear Speaker

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	Audio Couplate	33mmf, 56mmf, 330K, 10meg 33meg	2090525-1	
K2	Search Control Plate	470mmf, 1500mmf, 1000Ω, 4700Ω, 8200Ω, 270Ω, 470K, 6.8meg	2090528-1	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Lamp	1891	#1891
M2	Tuner	2090552-2	Includes Mtg. Plate Ass'y. and Pushbuttons
M3	Switch	218669-1	Power On-Off, DPST, Rotary Snap Type
M4	Switch	2090124-1	Seek, Seek Sensitivity
M5	Switch		Motor Reversing Part of Motor Mtg. Plate Ass'y, Part #2090673-1
M6	Motor	2090533-1	Tuner Drive
M7	Relay	2090507-1	
	Foot Switch	2090403-4	
	Speaker Receptacle	223476-3	
	Printed Board	2090751-1	

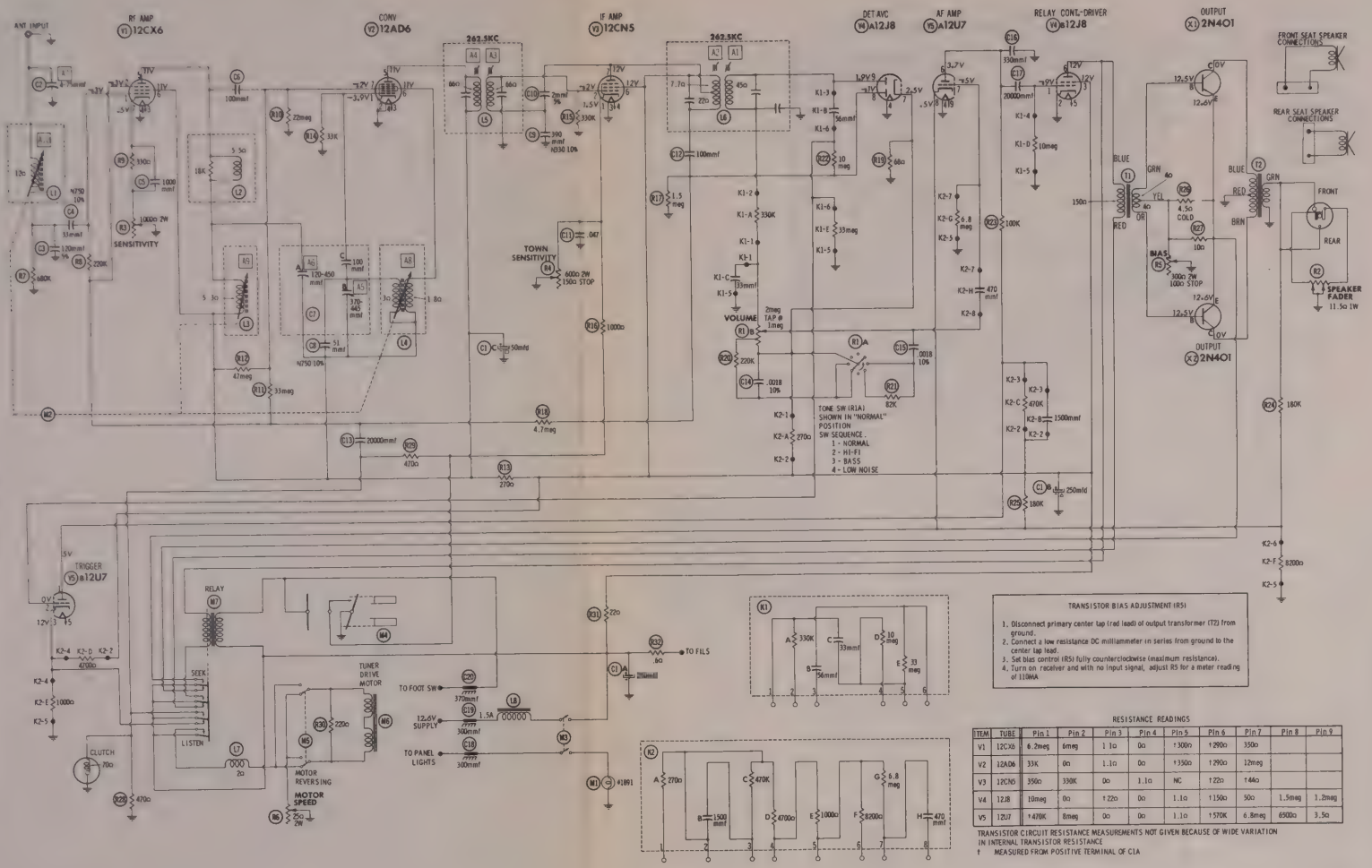
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2090685-1	Volume
Knob	2090686-1	Tuning
Disc	2090007-1	Tone & Fader

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



TRANSISTOR BIAS ADJUSTMENT (R5)

1. Disconnect primary center tap (red lead) of output transformer (T2) from ground.
2. Connect a low resistance DC milliammeter in series from ground to the center tap lead.
3. Set bias control (R5) fully counterclockwise (maximum resistance).
4. Turn on receiver and with no input signal, adjust R5 for a meter reading of 110MA.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	6.2meg	6meg	1.1Ω	0Ω	↑300Ω	↑290Ω	350Ω		
V2	12AD6	33K	0Ω	1.1Ω	0Ω	↑350Ω	↑290Ω	12meg		
V3	12CN5	350Ω	330K	0Ω	1.1Ω	NC	↑22Ω	↑44Ω		
V4	12J8	10meg	0Ω	↑22Ω	0Ω	1.1Ω	↑150Ω	50Ω	1.5meg	1.2meg
V5	12U7	↑470K	8meg	0Ω	0Ω	1.1Ω	↑570K	6.8meg	6500Ω	3.5Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

↑ MEASURED FROM POSITIVE TERMINAL OF C1A

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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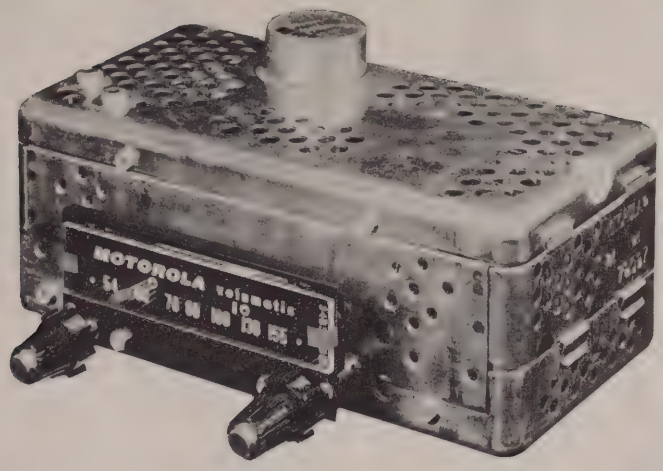
PHOTOFACT* Folder



TRADE NAME	Motorola Model 8M
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Universal Type Automobile Receiver
TUBES (Six)	Types 6BD6 RF Amplifier, 6BE6 Converter, 6BD6 IF Amplifier, 6CR6 Det.-AVC-AF Amp., 6AQ5 Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 4.8 Amp. @6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~ Mod.)	High frequency end stop.	Across voice coil.	A1, A2. A3, A4,	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
	Steps 3 & 4 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary back tuning cores (A8, A9, A10) 1" out of coils. Alignment tool similar to Fig. 2 may be used. Repeat Step 2.						
3.	Fig. 1	Thru dummy to antenna receptacle.	1400KC	13/64" from high frequency end stop.	Acorss voice coil.	A8, A9 A10	Adjust for maximum output.
4.	Fig. 1	"	1610KC	High frequency end stop.	Across voice coil.	A5, A6, A7	Adjust for maximum output. Repeat steps 3 & 4. Cement cores.
	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.						

POINTER ADJUSTMENT

Set radio to high frequency end stop. Slide pointer so that it coincides with calibration dot at extreme right. Cement pointer to dial cord.

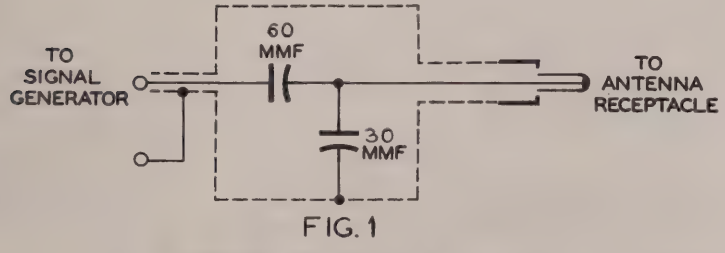


FIG. 1

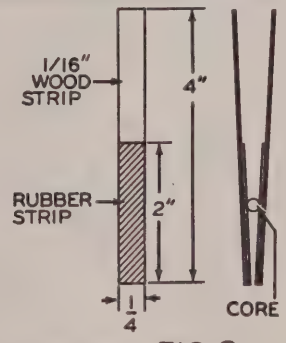


FIG. 2

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H591

MOTOROLA
MODEL 8M
MOTOROLA
MODEL 8M
SET 411 FOLDER 12

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 8M

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BD6	
V2	Converter	6BE6	
V3	IF Amplifier	6BD6	
V4	Det. -AVC-AF Amp.	6CR6	
V5	Output	6AQ5	
V6	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■15	350	23A485677	AFH3-104	C0770	FP328	TMT-89	T-455	R2274*
B	▲10	350							
C	20	25							

*Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	90		21K533453						
C3	50-280		20A502338						
C4	20-120		20K541014						
C5	150		21R410112	BPD-00015	DD-151	L10T15	UC-5315	5GA-T15	
C6	.05	200	8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C7	4.7		21R115955	NP0-SI4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	
C8	47		21R115593	N750-DI47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C9	395-470		20A485708						
C10	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C11	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	.002	600	8R121568	P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C13	.02	400	8R121004	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C14	.1	400	8R121006	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	.01	400	8R121002	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C16	470		21R410121	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C17	.004	600	8R121000	P688N-004	D6-402	CUB6D4	GEM-624	6TM-D4	
C18	.02	1000	8R121003	P1088N-02		CUB10S2	GEM-1012	10TM-S2	
C19	.5	100	8K121666	P288N-5		CUB2P5	GEM-205	2TM-P5	
C20	.5	100	8K121666	P288N-5		CUB2P5	GEM-205	2TM-P5	
C21A	300		21A522033						
B	300								

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	1/2	18K533457	F1-55		QJ-800A		Tone Volume, Tap@125K
B	250K	1/2		R4-37				
C	Switch			KB-4				

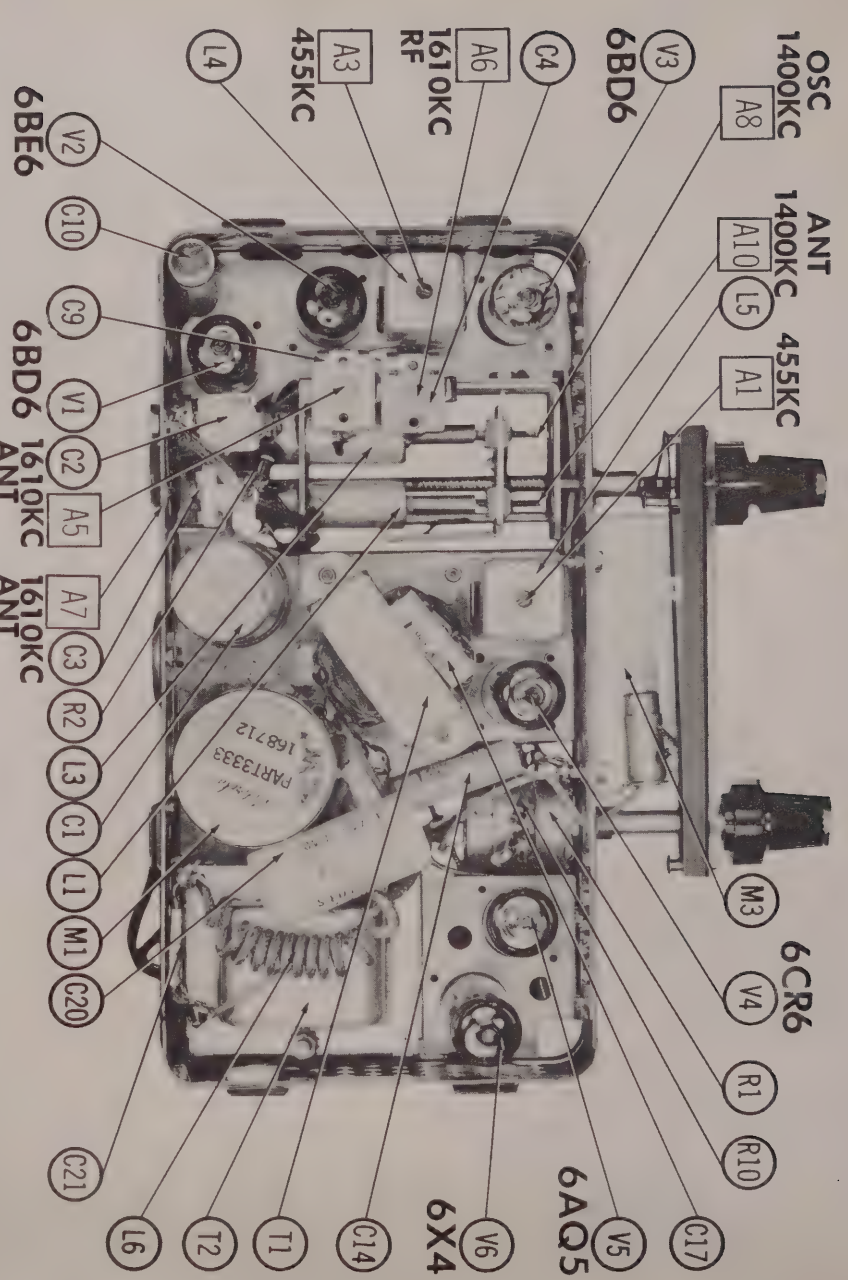
"Concentrikit" Equivalent; K-6Kit, Base Elements and Shafts: B11-137, P17-129 (Panel) B13-130X, R9-214 (Rear) 76-1 (Switch)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R2	100K		6K122313	
R3	1meg		6K122324	
R4	220Ω		6R6270	
R5	100K		6K122313	
R6	47K		6K121687	
R7	150Ω		6K124797	
R8	6800Ω	2	6K122012	
R9	3.3meg		6K119407	
R10	15K		6R410033	
R11	2.2meg		6R3927	
R12	1meg		6K122324	
R13	220K		6R6015	
R14	270K		6R6414	
R15	4.7meg		6K122326	
R16	270Ω		6R6270	
R17	2200Ω	2	6R476130	
R18	56Ω	1	6K125697	
R19	56Ω	1	6K125697	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	24B536919					Note 1.
	Ant. Coil	1K536807					Note 2.
L2	RF Coil	24K536585					Note 1.
	RF Coil	1K536806					Note 2.
L3	Osc. Coil	24B536594					Note 1.
	Osc. Coil	1K536805					Note 2.
L4	Input IF	24K533461	16-6758	BC-352	12-C1	RF-1	
L5	Output IF	24B533460	16-6770	BC-355	12-C6		
L6	"A" Lead Choke	24K533822					
L7	Hash Choke	24A538914					10.3 microhenries

Note 1. Part of M4 (MT-178)

Note 2. Part of M4 (MT-177)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	6.3VCT @ 2.5A	400VCT @ .040A		25C534978①					22R63	

① Use Part #25C501303 for replacement.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5200Ω	3-4Ω	25B70171	Z1107	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	5" x 7"	PM	3-4Ω	50C541964	57A21	① Alternate
	6" x 9"	PM	3-4Ω	50K541105①	69A3	
	5"	PM	3-4Ω	50C542774①		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interrupter	6.3V	115∿	48B3333	5342	903M	5342	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	SFE	9A 32V	65K16248	9K536617	307009. (SFE9A 32V)	155009	SFE9	HDH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Lamp	65R10867	#44
M4	Tuner	77D536917	(MT-178) Complete
	Tuner	77D536804	(MT-177) Complete

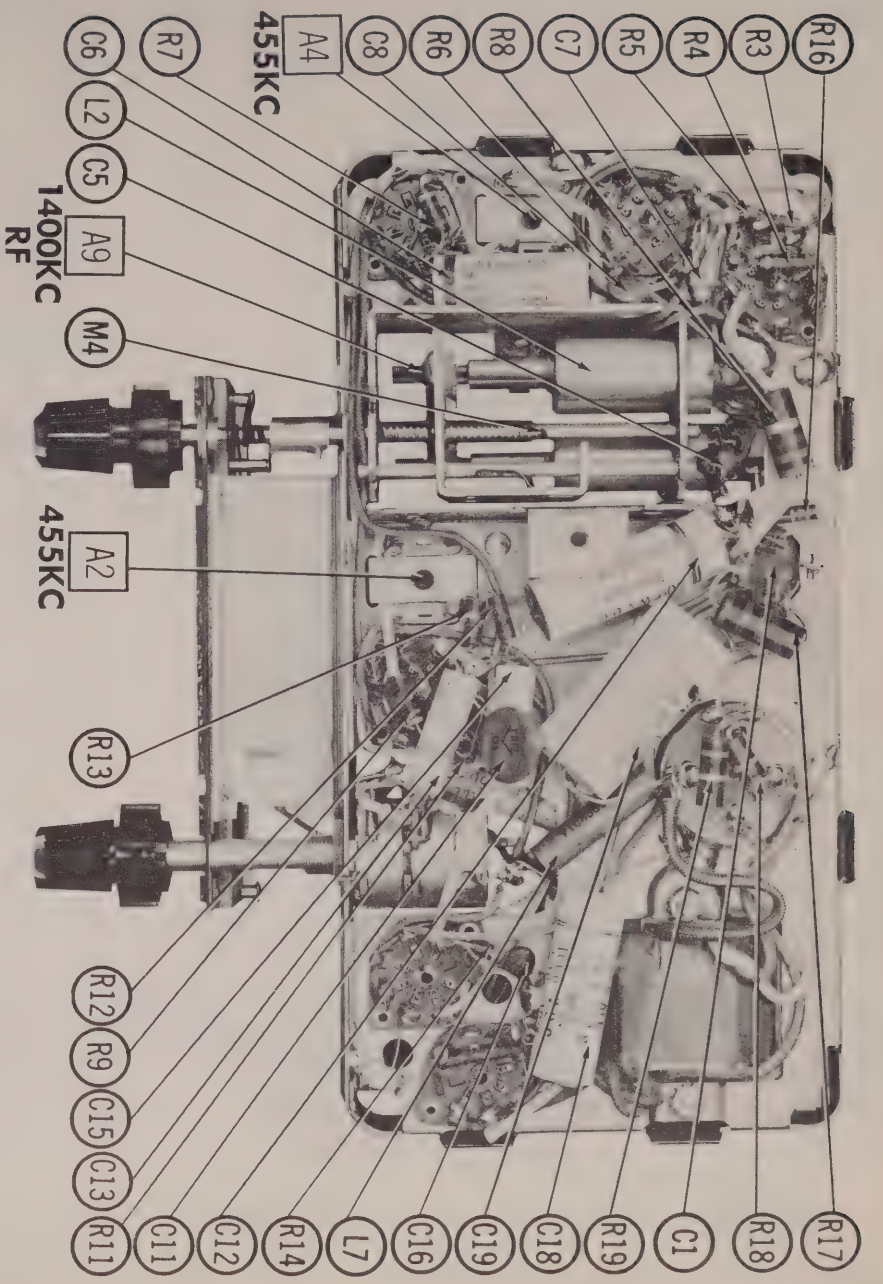
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW

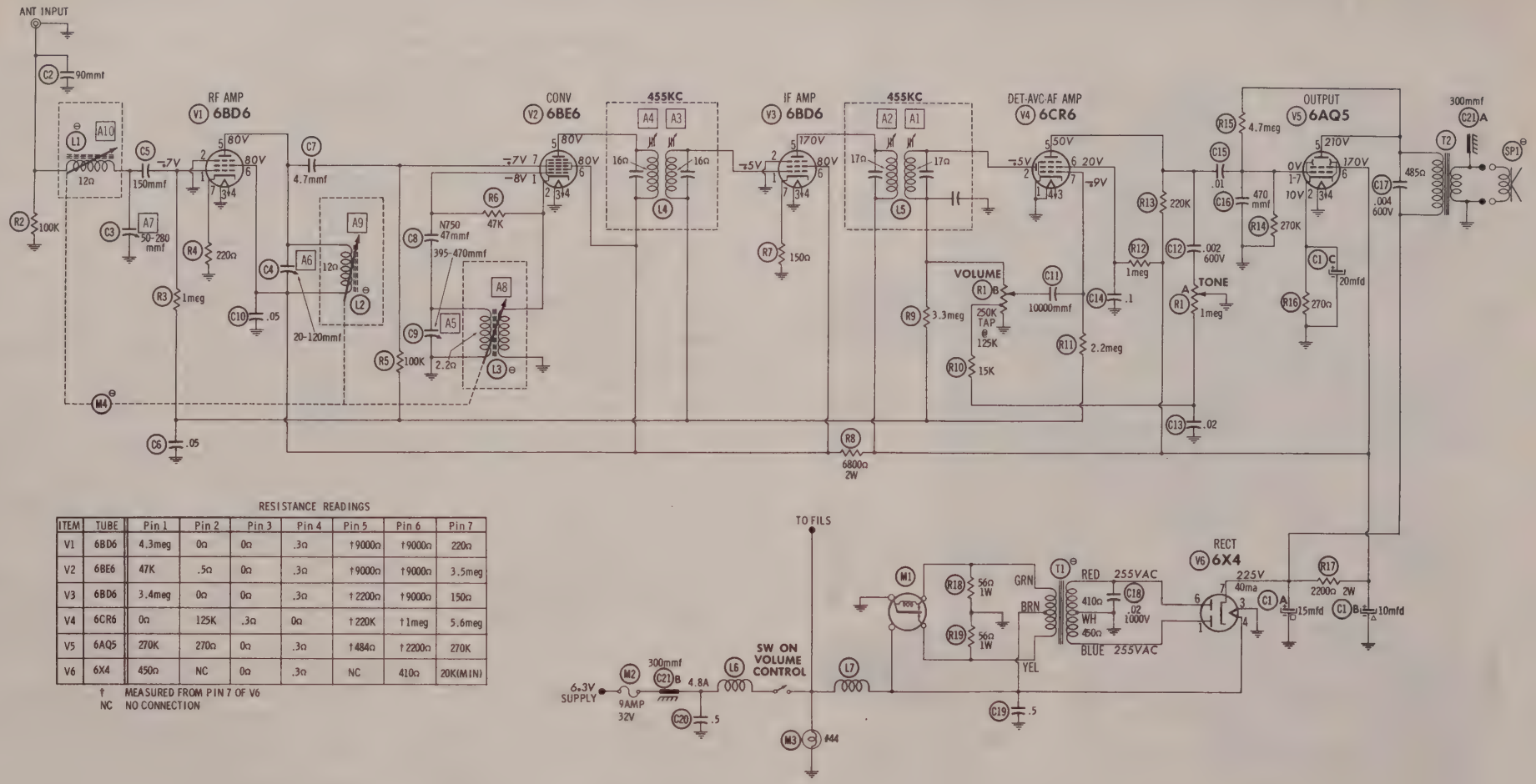


SET 411 FOLDER 12

FOLDER 12

MOTOROLA MODEL 8M

MOTOROLA MODEL 8M



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BD6	4.3meg	0Ω	0Ω	.3Ω	†9000Ω	†9000Ω	220Ω
V2	6BE6	47K	.5Ω	0Ω	.3Ω	†9000Ω	†9000Ω	3.5meg
V3	6BD6	3.4meg	0Ω	0Ω	.3Ω	†2200Ω	†9000Ω	150Ω
V4	6CR6	0Ω	125K	.3Ω	0Ω	†220K	†1meg	5.6meg
V5	6AQ5	270K	270Ω	0Ω	.3Ω	†484Ω	†2200Ω	270K
V6	6X4	450Ω	NC	0Ω	.3Ω	NC	410Ω	20K(MIN)

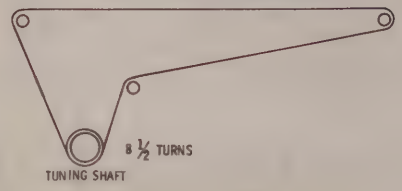
† MEASURED FROM PIN 7 OF V6
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

DIAL CORD STRINGING



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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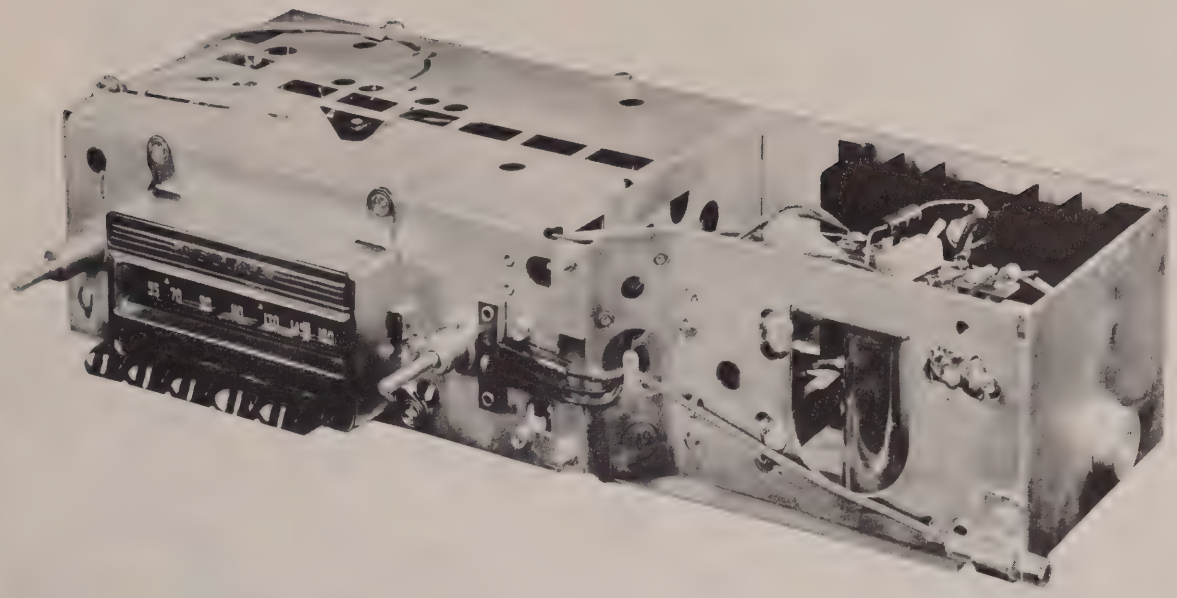
PHOTOFACT* Folder
*TRADE MARK

OLDSMOBILE
MODEL 989127

OLDSMOBILE
MODEL 989127



TRADE NAME	Oldsmobile Model 989127 (For 1958 Oldsmobile Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12F8 Det. -AVC-1st AF Amp. 12K5 2nd AF Amplifier
POWER SUPPLY	12 Volt Storage Battery — RATING 1.9 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

OLDSMOBILE
MODEL 989127

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Tone control to "Treble"

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis.	262KC (400~ Mod.)	High frequency end stop.	Across voice coil.	A1, A2. A3, A4	Adjust for maximum output.
2.	68mmf	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Check setting of osc. coil core (A5) Rear of core should be 1 5/8" from mounting end of coil form. Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal.	"	A9, A10	Adjust for maximum output.
4.	"	"	1615KC	High frequency end stop.	"	A7, A8	"
5.	With radio tuned to 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.						
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons

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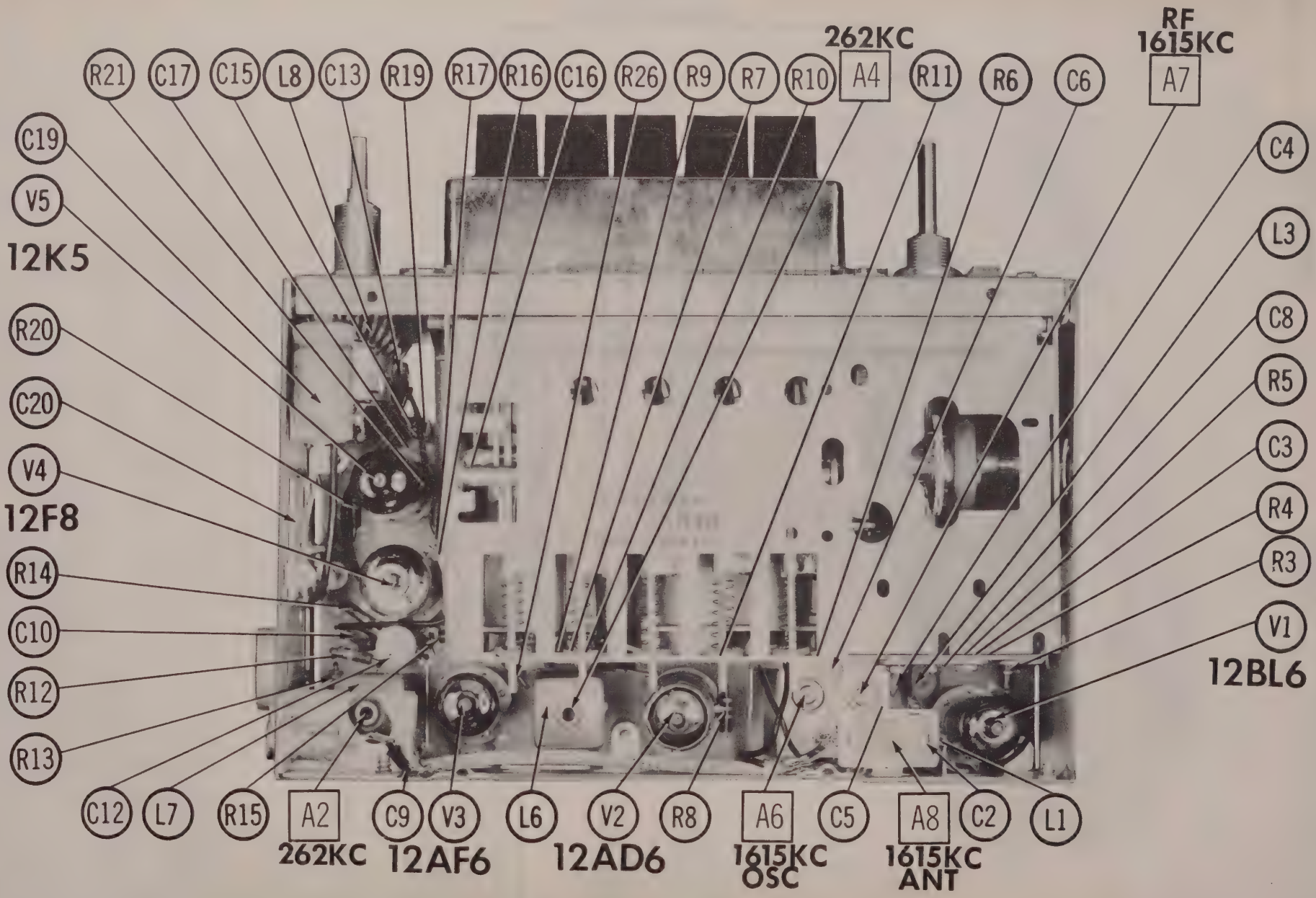
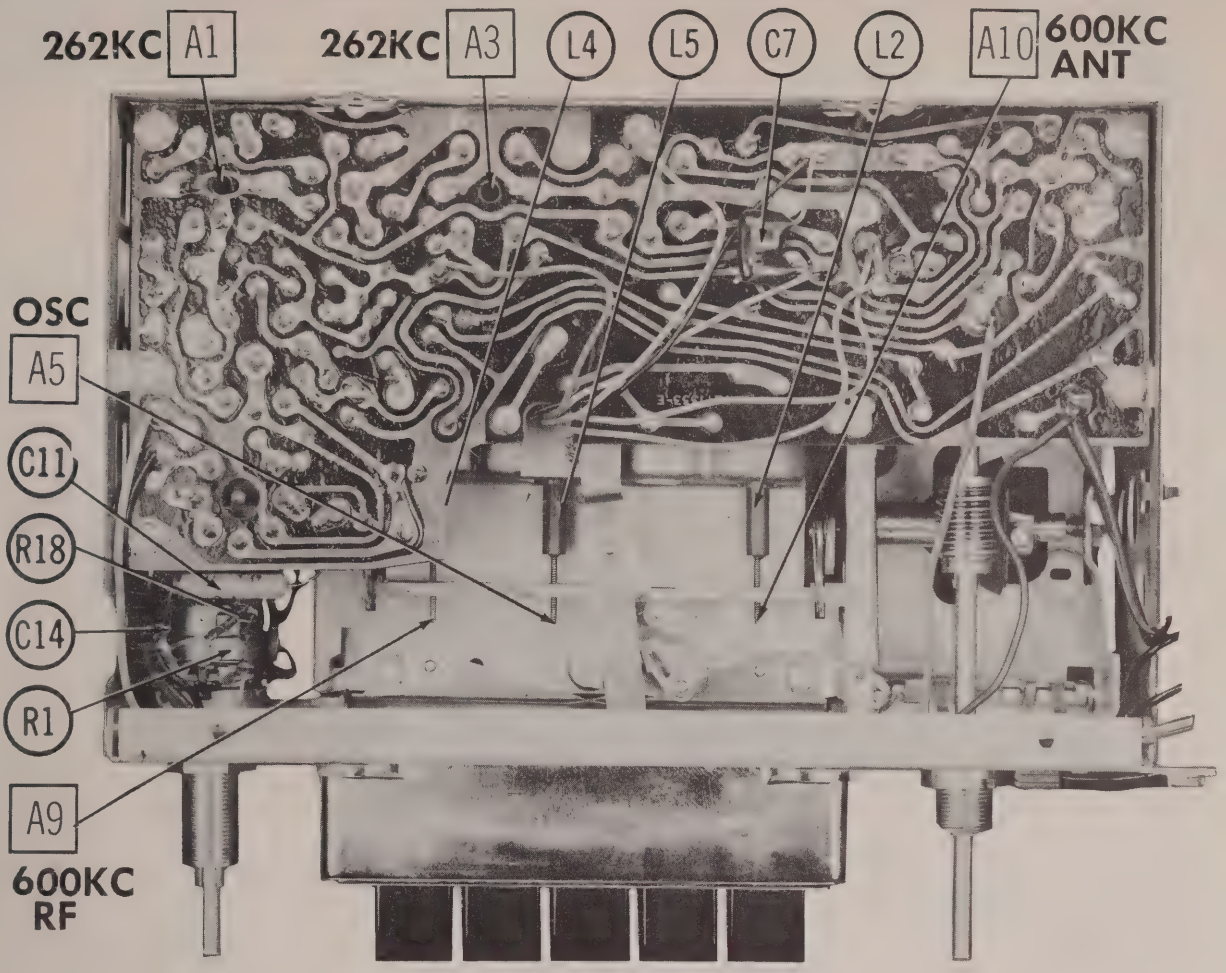
H585

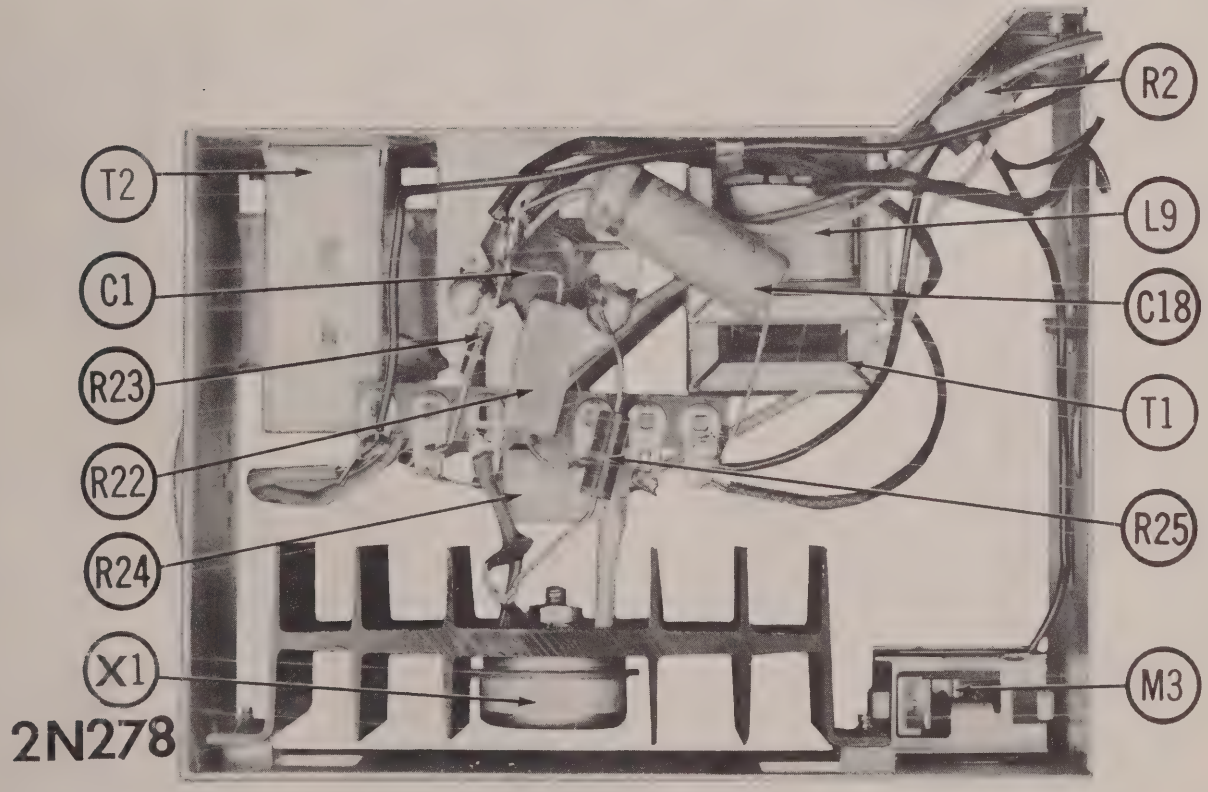
SET 411 FOLDER 13



CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW



POWER CHASSIS

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1221015	16-6756	BC-317	13-PH1		
L7	Output IF	1221021		BC-318			
L8	Fil. Choke	7241708					1.4 microhenry

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.9A	.7Ω	.010HY	7270689						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	50	:1	7269877							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9Ω	4Ω	7269650				TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6" x 9"	PM	4-5Ω	7270842	69A3Z5	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		4A 32V	7270622					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp		#1891
M3	Switch	7271424	Speaker Interlock
	Printed Board	7271333-E	
	Speaker Ass'y.	Model 989145	Complete, for 6" x 9" Rear Seat Speaker Installation

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	572330	Control
Knob	572995	Dummy
Knob	572994	Tone
Push Button	1221065	Five used (Includes Front Bearing Plate & Slides)
Push Button	7268848	Individual
Pointer Ass'y.	1221067	
Dial	7271694	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12AF6	
V4	Det-AVC-1st AF Amp.	12F8	
V5	2nd AF Amplifier	12K5	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■1000	16	7270691	AFH2-02-70		WP200.27			R2668 *
B	▲500	16							

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	9-58		7268811						
B	18								
C3	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C4	68		6369	N750-DI68	DTN-68	C10Q68U		5TCU-Q68	N750
C5	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C6A									
B			7268828						
C									
D									
C7	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C8	.047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C9	47		6367	1469-000047	D6-470	22R5Q47		MS-447	10%
C10	47		6367	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C11	.0047	200	6631	P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C12	.1	50	7269714	P288N-1	DF-104	BC2P1J	ACE401	2SE-P10	
C13	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C14	100		6371	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C15	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C16	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C17	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C18	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	Note 1
C19	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C20			1220682						

Note 1. Some versions may use .27mfd in this application (Part #7271414)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	½	7270679				■UE3820S	Tone
B	5meg	½						Volume
C	Switch							On-Off
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

■ "STA-LOC" Equivalent FG254A, OS1125, RU56A, IS1687, US-41

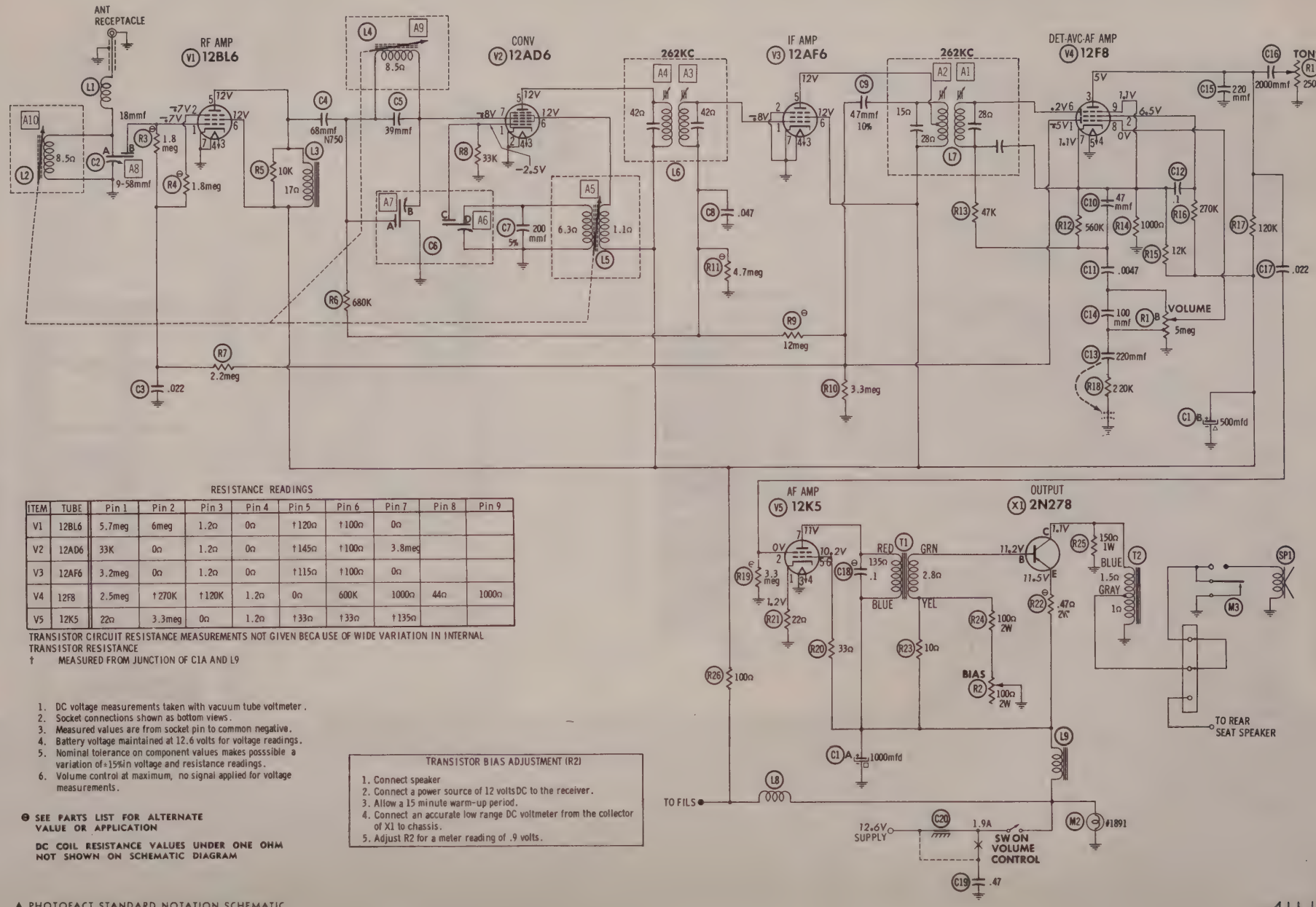
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R3	1.8meg		1238	Note 1.
R4	1.8meg		1238	Note 1.
R5	10K		1137	
R6	680K		1233	
R7	2.2meg		1239	
R8	33K		1217	
R9	12meg			Note 2
R10	3.3meg		1241	
R11	4.7meg		1243	Note 3
R12	560K		1232	
R13	47K		1219	
R14	1000Ω		1125	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R15	12K		1212	
R16	270K		1228	
R17	120K		1224	
R18	220K		1227	
R19	3.3meg		1241	Note 4
R20	33Ω		1107	
R21	22Ω		1105	
R22	.47Ω	2	7270608	Fuse Type
R23	10Ω		1101	
R24	100Ω	2(WW)	1187	
R25	150Ω	1	1152	
R26	100Ω		1113	

Note 1. Some versions may use 1.5 meg in this application (Part #1237)
Note 2. Some versions may use 4.7meg in this application (Part #1243)
Note 3. Some versions may use 1.8meg in this application (Part #1238)
Note 4. Some versions may use 470K in this application (Part #1231)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5.7meg	6meg	1.2Ω	0Ω	†120Ω	†100Ω	0Ω		
V2	12AD6	33K	0Ω	1.2Ω	0Ω	†145Ω	†100Ω	3.8meg		
V3	12AF6	3.2meg	0Ω	1.2Ω	0Ω	†115Ω	†100Ω	0Ω		
V4	12F8	2.5meg	†270K	†120K	1.2Ω	0Ω	600K	1000Ω	44Ω	1000Ω
V5	12K5	22Ω	3.3meg	0Ω	1.2Ω	†33Ω	†33Ω	†135Ω		

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF C1A AND L9

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

TRANSISTOR BIAS ADJUSTMENT (R2)

1. Connect speaker
2. Connect a power source of 12 volts DC to the receiver.
3. Allow a 15 minute warm-up period.
4. Connect an accurate low range DC voltmeter from the collector of X1 to chassis.
5. Adjust R2 for a meter reading of .9 volts.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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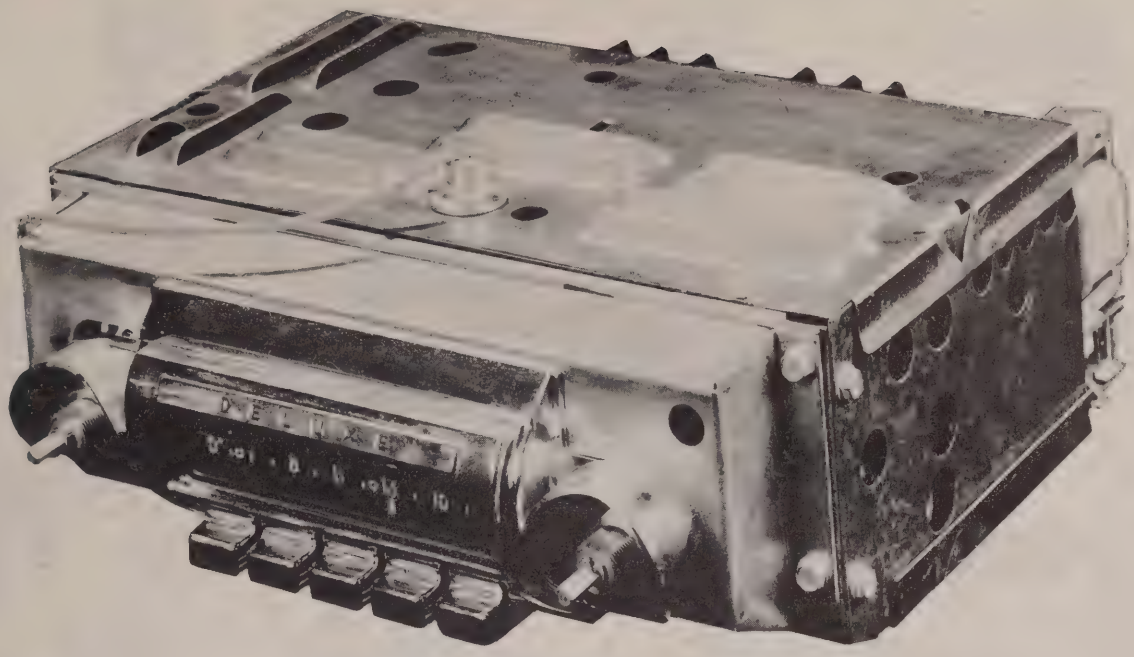
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PONTIAC
MODEL 988822

PONTIAC
MODEL 988822



TRADE NAME	Pontiac Model 988822 (For 1958 Pontiac Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12F8 Det.-AVC-AF Amp., 12K5 AF Amplifier
POWER SUPPLY	12 Volt Storage Battery — RATING 2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC

PONTIAC
MODEL 988822

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Set tone control to Treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400∿ Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to antenna connector. Low side to chassis.	1615KC	High frequency end stop	Across voice coil	A6, A7, A8	Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal	"	A9, A10	"
4.	"	"	1615KC	High frequency end stop	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to an 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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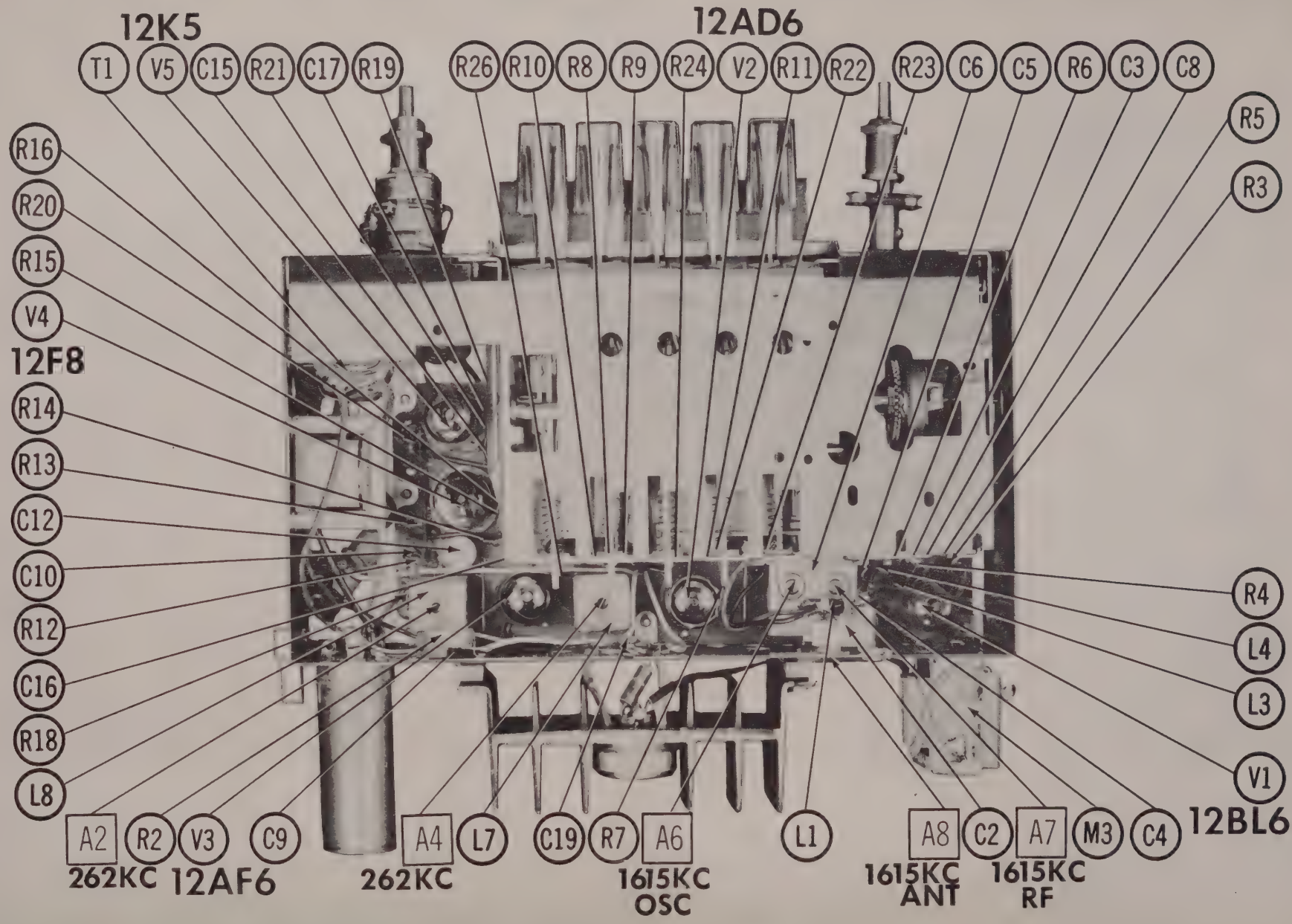
SET 411 FOLDER 14



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12AF6	
V4	Det.-AVC-AF Amp.	12F8	
V5	AF Amplifier	12K5	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■1000	16	7270691	AFH2-02-70		WP200. 27			R2668 *
B	▲500	16							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

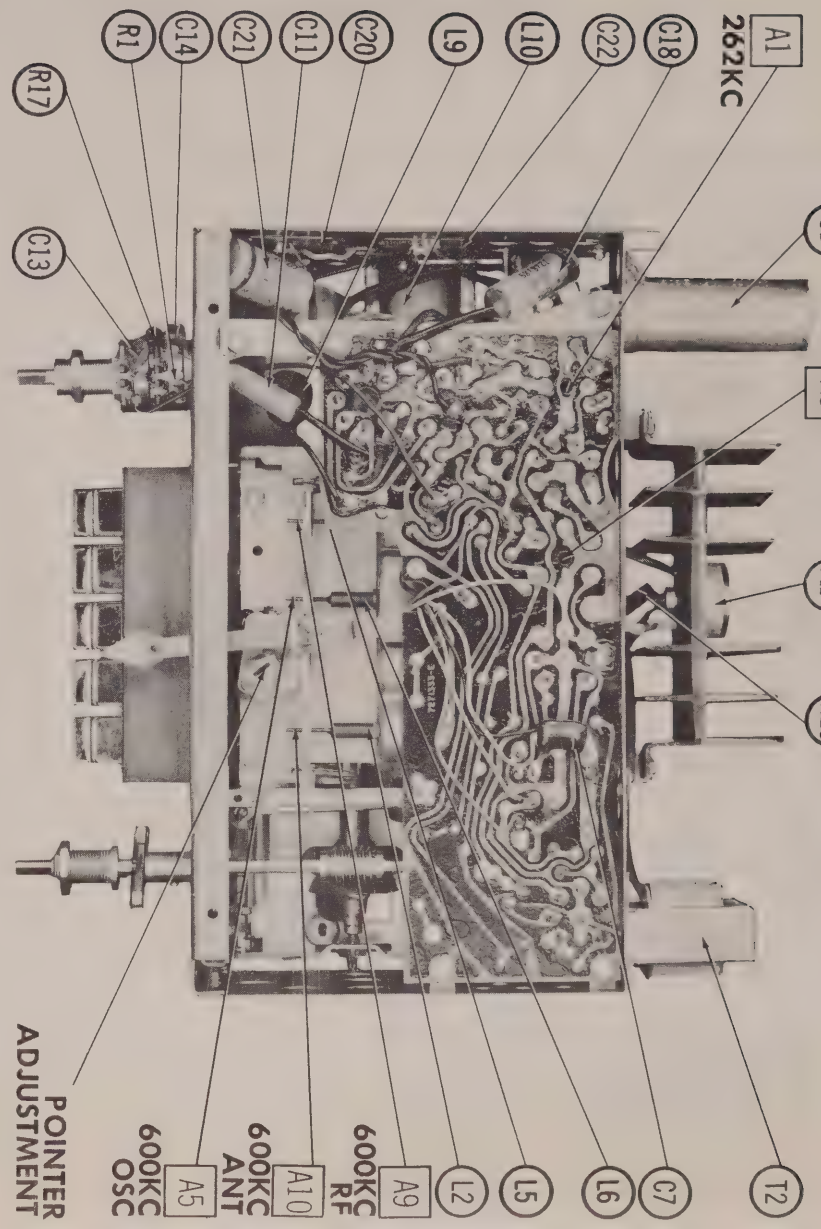
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	15-65		7271397						
B	34								
C3	. 022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C4	68		6369	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C5	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C6A									
B			7268828						
C									
D									
C7	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C8	. 047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C9	47		6367	1468-000047	DD-470	1W5Q47	UC-5447	1FM-Q47	
C10	47		6367	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C11	. 005	600	6631	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C12	.1	50	7269714	P288N-1		BC2P1J	ACE401	2SE-P10	
C13	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C14	15		6361	BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C15	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C16	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C17	. 022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C18	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C19A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C20			1212278						
C21	. 47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C22			1212278						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5meg	½	7271466				■UE3816S	Tone
B	5meg	½						Volume, Tap ② 1meg
C	Switch							
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

■ "STA-LOC" Equivalent FG56A, OS875, RU56T16, IS1187, US-41

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	DELCO PART No.	NOTES
R3	1.5meg		1237	
R4	10K		1137	
R5	1.5meg		1237	
R6	680K		1233	
R7	33K		1217	
R8	2.2meg		1239	
R9	3.3meg		1241	
R10	4.7meg		1243	
R11	1.8meg		1238	
R12	560K		1232	
R13	1000Ω		1125	
R14	12K		1212	
R15	270K		1228	
R16	120K		1224	
R17	470K		1231	
R18	47K		1219	
R19	3.3meg		1241	Note 1
R20	33Ω		1107	
R21	22Ω		1105	
R22	.47Ω		7270608	
R23	10Ω		1101	
R24	100Ω	2	1187	
R25	150Ω	1	1152	
R26	100Ω		1113	

Note 1. Some versions may use 470K in this application (Part #1231).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7258487					26 Microhenries
L4	RF Choke	7269684					1772 Microhenries
L5	RF Coil	1221138					
L6	Osc. Coil	1221151					
L7	Input IF	1221015	16-6756	BC-317	13-PH1		
L8	Output IF	1221021		BC-318			
L9	Fil. Choke	1217846					1.4 Microhenry

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	.92A	.75Ω	.011 Hy.	7271321						

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	50	:1	7269877							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	10.2Ω Tap @ 3-4Ω	7271527							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA DELCO PART No.	QUAM PART No.	NOTES
SP1	6" X 9"	PM	3-4Ω	7270132	69A3	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA DELCO PART No. FUSE	DELCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1		7½A 32V	455640					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp		#57
M3	Switch	7271425	Speaker Interlock
M4	Speaker Ass'y	Models 988838, 988852	Complete, for Dual 6" X 9" Rear Seat Speaker installation
	Printed Board	7271333-E	

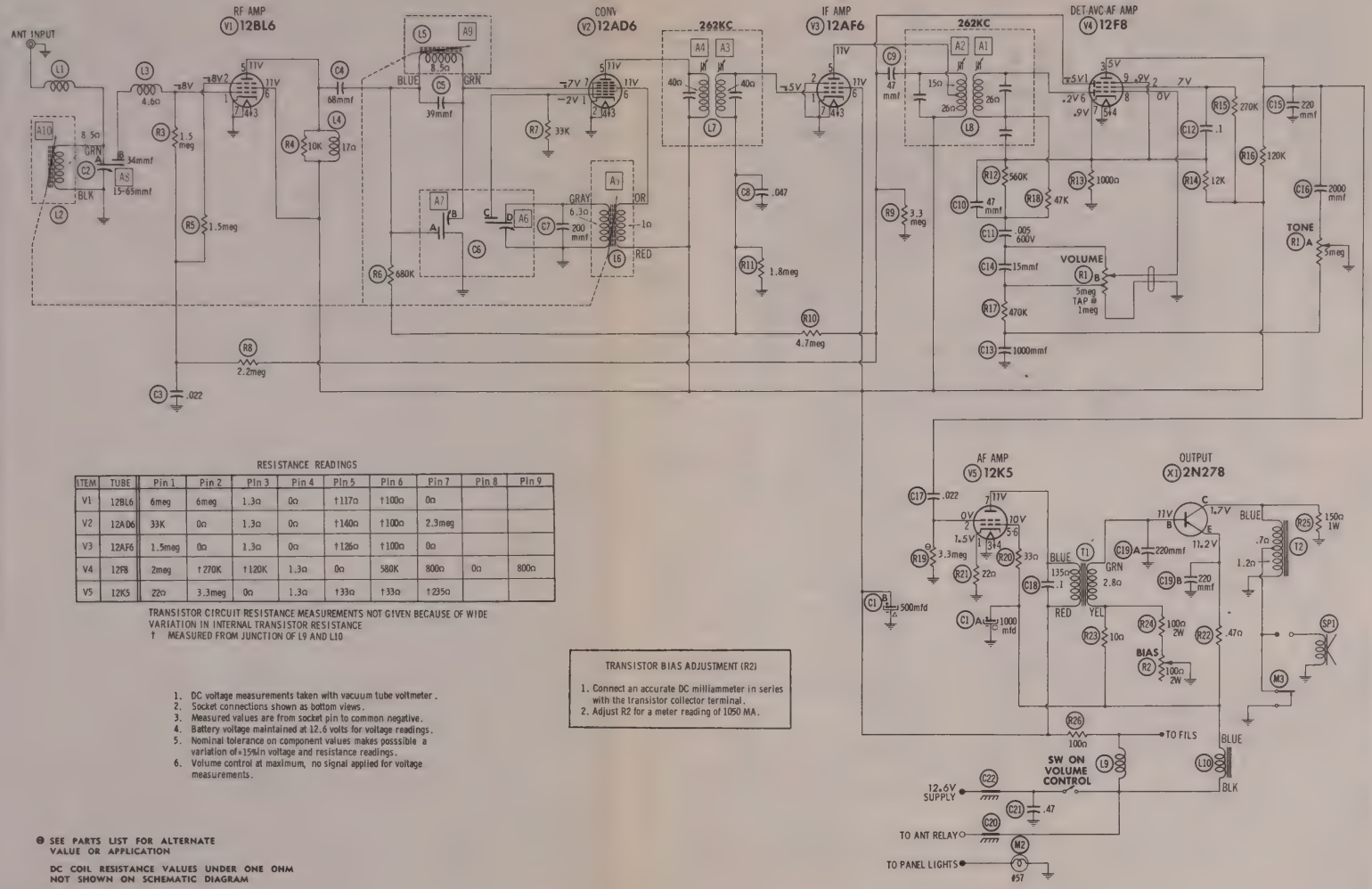
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	529079	Control, two used
Knob	529077	Dummy
Knob	529078	Tone
Pushbutton	1221144	Five used, incl. front bearing plate and slides
Pointer Ass'y	1221146	
Dial	7270491	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	6meg	6meg	1.3Ω	0Ω	†117Ω	†100Ω	0Ω		
V2	12AD6	33K	0Ω	1.3Ω	0Ω	†140Ω	†100Ω	2.3meg		
V3	12AF6	1.5meg	0Ω	1.3Ω	0Ω	†126Ω	†100Ω	0Ω		
V4	12F8	2meg	†270K	†120K	1.3Ω	0Ω	580K	800Ω	0Ω	800Ω
V5	12K5	22Ω	3.3meg	0Ω	1.3Ω	†33Ω	†33Ω	†235Ω		

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF L9 AND L10

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR BIAS ADJUSTMENT (R2)

1. Connect an accurate DC milliammeter in series with the transistor collector terminal.
2. Adjust R2 for a meter reading of 1050 MA.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

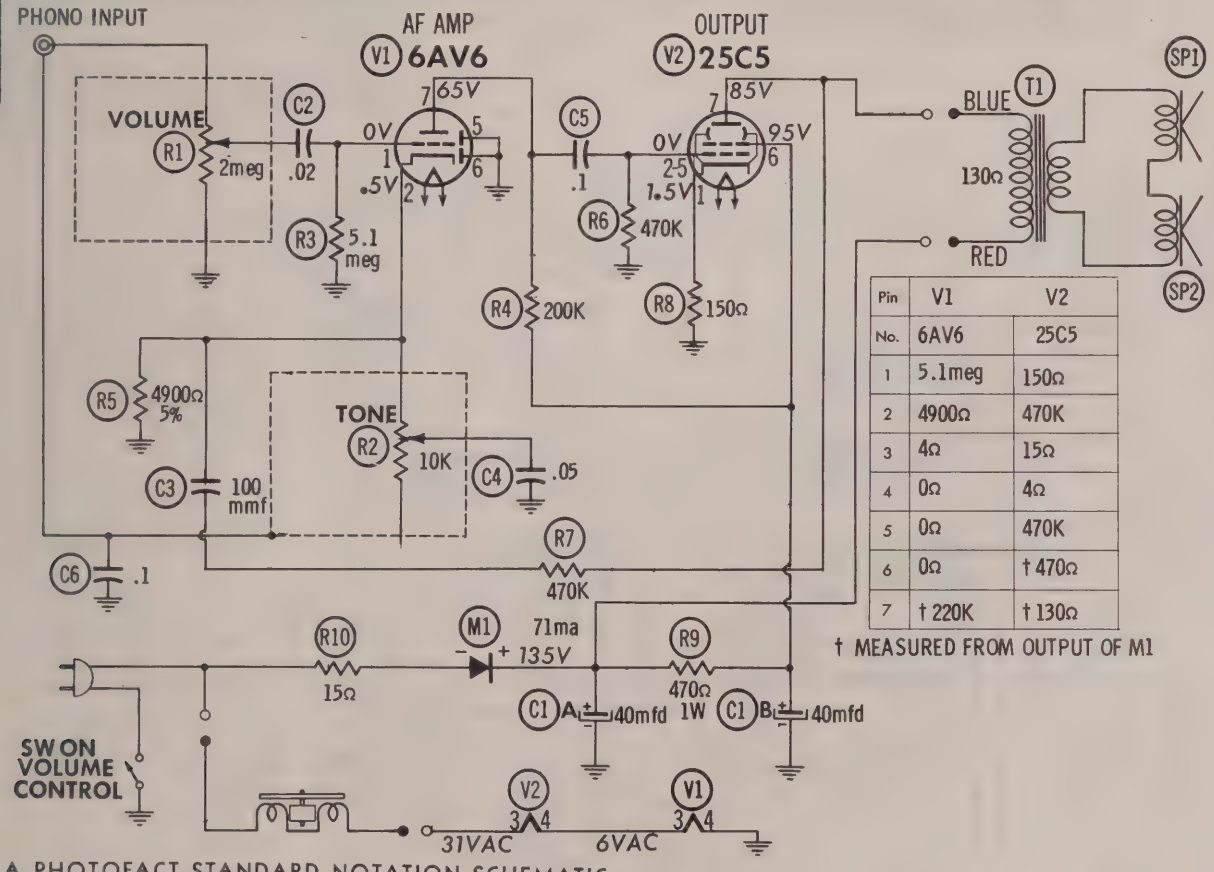
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SONIC
MODEL 470

SONIC
MODEL 470

TRADE NAME	Sonic Model 470
MANUFACTURER	Sonic Industries, Inc., 19 Wilbur St., Lynbrook, N.Y.
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Two)	Types 6AV6 AF Amplifier, 25C5 Output
POWER SUPPLY	105-120 Volts AC-60 Cycle RATING .47 Amp. @117 Volts AC (49 Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER--SEE SIMILAR WEBCOR 152--PHOTOFACT SET 375 FOLDER 17 OR RECORD CHANGER MANUAL RC-10



Pin No.	V1 6AV6	V2 25C5
1	5.1meg	150Ω
2	4900Ω	470K
3	4Ω	15Ω
4	0Ω	4Ω
5	0Ω	470K
6	0Ω	† 470Ω
7	† 220K	† 130Ω

† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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H271

SET 411 FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6AV6	

ITEM No.	USE	TYPE	NOTES
V2	Output	25C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040	BBRD4415	TCD48	TDLD-7	MTD-1540	TVA-2445
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SONIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.02	100		P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C3	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C4	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	.1	200				BC2P1J	ACE401	2SE-P10	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2meg	½						Volume & Switch
R2	10K	½						Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R3	5.1meg			
R4	200K			
R5	4900Ω 5%			
R6	470K			

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R7	470K			
R8	150Ω			
R9	470Ω	1		
R10	15Ω			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	6-8Ω	OPX400	Z1005		AU-608		24S63		

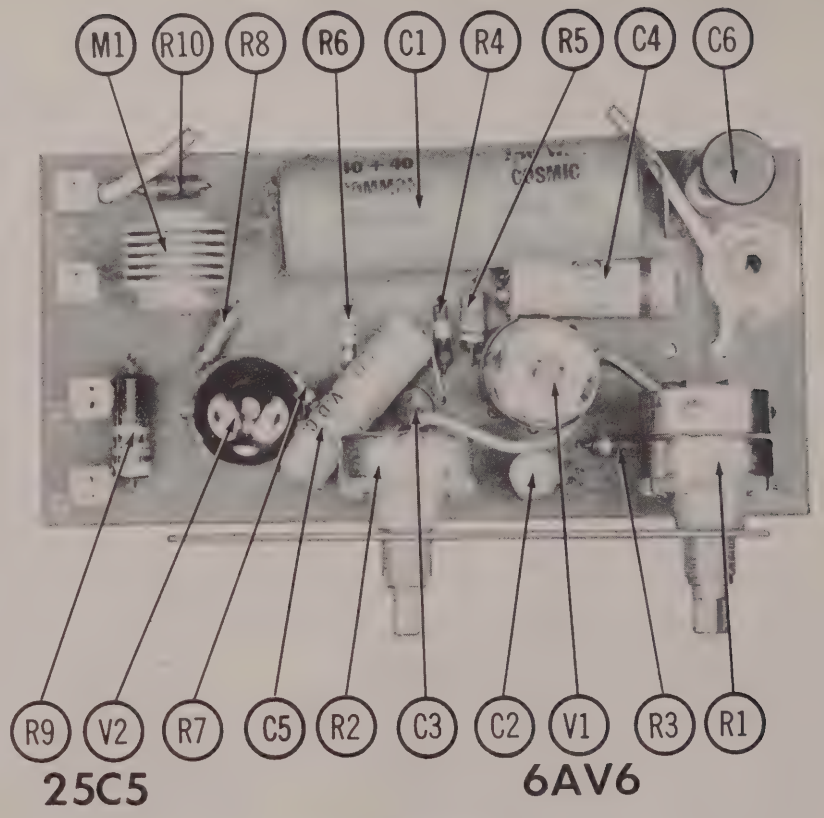
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω		5A07R①	①Connect in series and phase
SP2	5"	PM	3-4Ω		5A07R①	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SONIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.071A		1003A①	RS075 ①	75① M150②	①Selenium Type ②Silicon Type.

CHASSIS—TOP VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SONIC PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2		81-TB		56	PT-1	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SONIC PART No.	JENSEN PART No.	WALCO PART No.	
M3				

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

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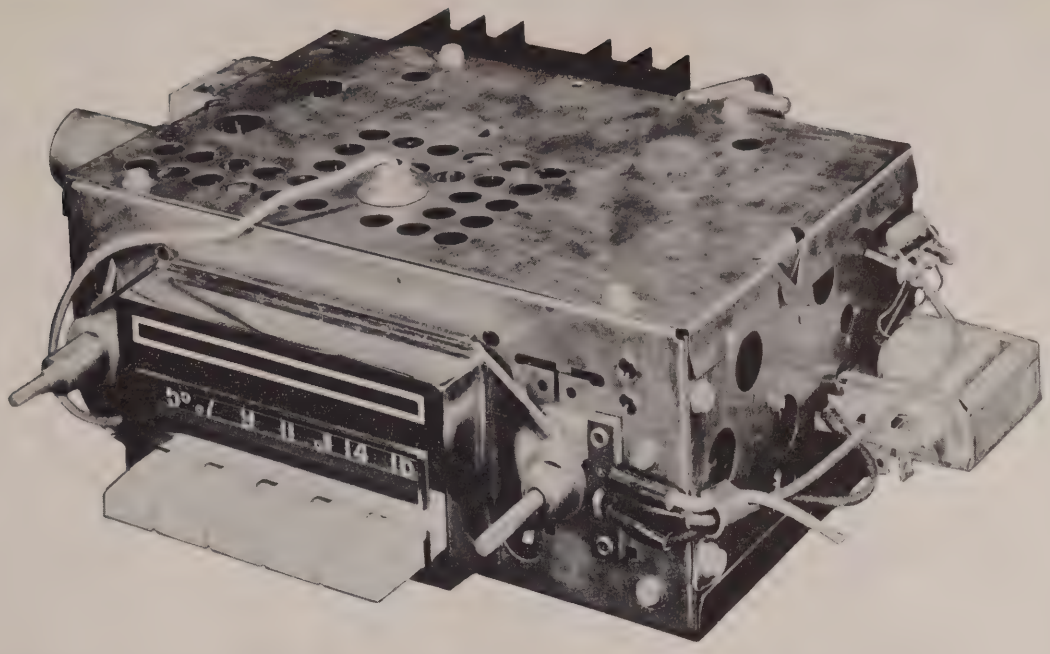
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STUDEBAKER-PACKARD MODEL AC-2906

STUDEBAKER-PACKARD
MODEL AC-2906



TRADE NAME	Studebaker-Packard Model AC-2906 (For 1958 Studebaker & Packard Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12F8 Det.-AVC-1st. AF Amp., 12K5 2nd. AF Amplifier
POWER SUPPLY	12 Volt Storage Battery — RATING 2.15 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

STUDEBAKER-PACKARD
MODEL AC-2906

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Set tone control for maximum treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400~ Mod)	High freq. stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to antenna receptacle. Low side to chassis.	1615KC	High freq. stop	Across voice coil	A6, A7, A8	"
3.	"	"	600KC	Tune to 600KC signal	"	A9, A10	"
4.	"	"	1615KC	High freq. stop	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to a 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

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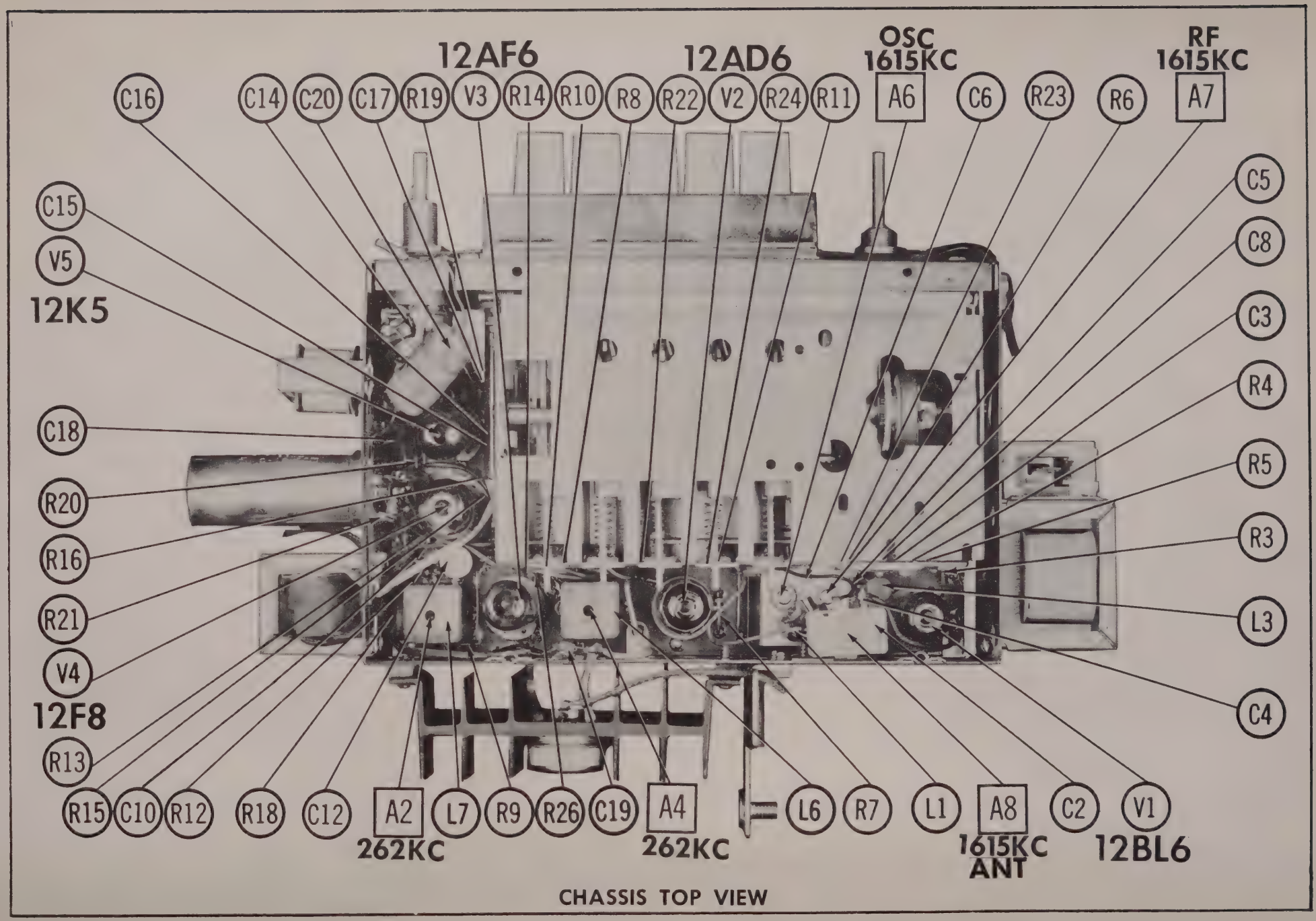
H596

SET 411 FOLDER 16



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12AF6	

ITEM No.	USE	TYPE	NOTES
V4	Det.-AVC-1st. AF Amp.	12F8	
V5	2nd. AF Amplifier	12K5	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■1000	16	7270691	AFH2-02-70		WP200.8			R2668 *
B	▲500	16							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	7-73		7268558						
B	42								
C3	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-2122	2TM-S22	
C4	68		6369	N750-DI 68	DTN-68	C10Q68U		5TCU-Q68	N750 10%
C5	39		6366						N470 10%
C6A									
B			7268828						
C									
D									
C7	200		7270129	1469-0002	DD-201	5R5T2	MCE237	MS-32	5%
C8	.047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C9	47		6367	1469-000047	D6-470	5R5Q47		MS-447	10%
C10	47		6367	N750-DI47	DD-470	C10Q47U	NT-5447	5TCU-Q47	N750
C11	.005	600	6631	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C12	.1	50	7269714	P288N-1	DF-104	BC2P1J	ACE401	2SE-P10	
C13	470		6379	1469-00047	MD-471	5R5T47		MS-347	10%
C14	22		6363	1468-000022	DD-220	L10Q22	UC-5422	5GA-Q22	
C15	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C16	2000		6352	BPD-002	DD-222	BYA10D2	DC522	5HK-D2	
C17	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C18	.05	100		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	Note 1
C19A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C20	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C21			7271769						

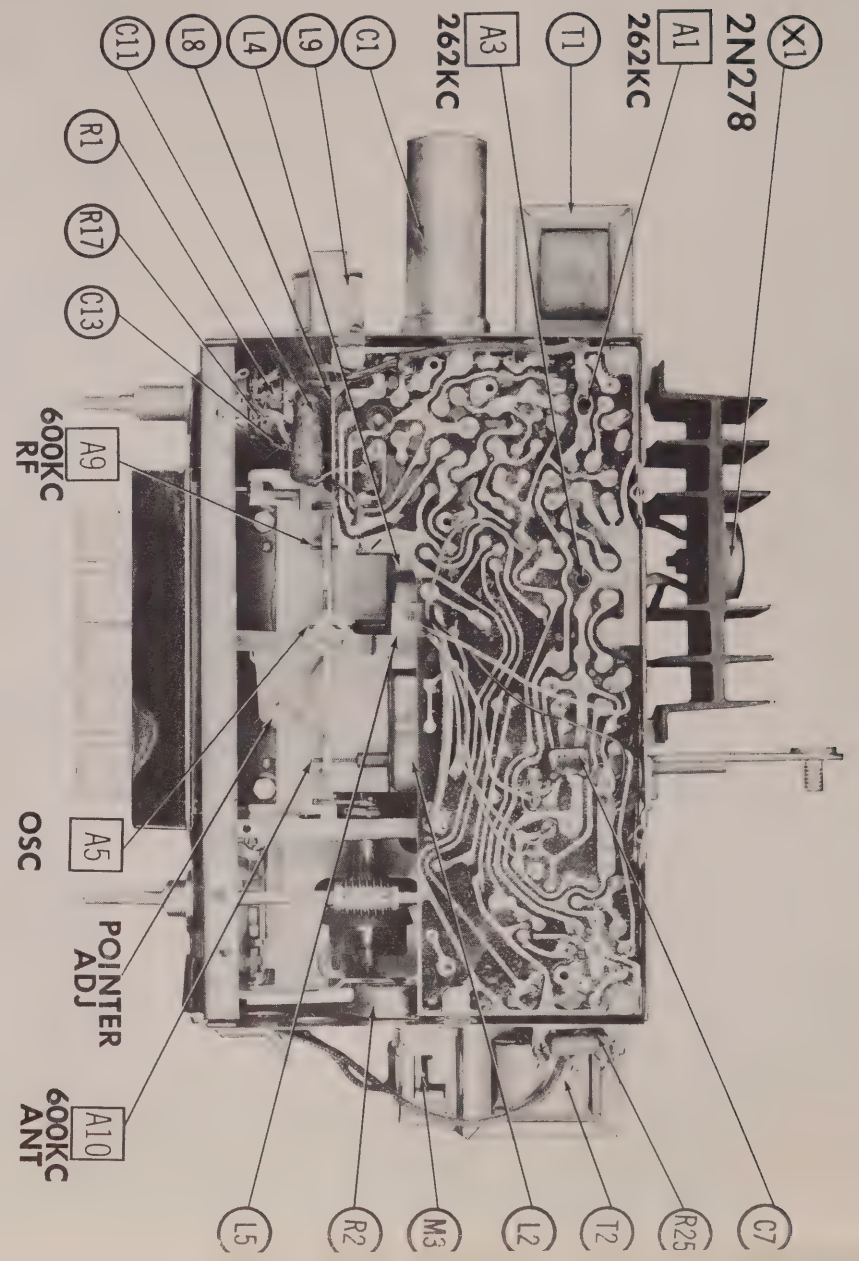
Note 1. Some versions may use .1mfd in this application (Part #6690).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	7271782				■UE3814S	Tone
B	5meg	½						Volume, Tap ⓐ 1meg
C	Switch							Power On-Off
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

Speaker Fader (Part #7267827) may be used in some versions.
■ "STA-LOC" Equivalent: FH56A, CS1187, RU56T16, IS1625, US-41.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	DELCO PART No.	NOTES
R3	1.5meg		1237	
R4	10K		1137	
R5	1.5meg		1237	
R6	680K		1233	
R7	33K		1217	
R8	2.2meg		1239	
R9	3.3meg		1241	
R10	4.7meg		1243	
R11	1.8meg		1238	
R12	560K		1232	
R13	1000Ω		1125	
R14	12K		1212	
R15	270K		1228	
R16	120K		1224	
R17	1meg		1235	
R18	47K		1219	
R19	470K		1231	
R20	33Ω		1107	
R21	22Ω		1105	
R22	36Ω Cold	2	7270608	Fuse Type
R23	10Ω		1101	
R24	100Ω	5	7271525	
R25	150Ω	1	1152	
R26	100Ω		1113	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 Microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1221015	16-6756	BC-317	13-PH1		
L7	Output IF	1221021		BC-318			
L8	Fil. Choke	1217846					1.4 Microhenries

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.92A	.75Ω	.011 Hy.	7271321						

TRANSFORMER (INTERSTAGE)

ITEM No.	Turns Ratio PRI.	Turns Ratio SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	50 :	1	7269877							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	9Ω Tap ⓐ	3-4Ω	7271827							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA DELCO PART No.	QUAM PART No.	NOTES
SP1	4" x 8"	PM	3-4Ω	7272368		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA DELCO PART No. FUSE	DELCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1		7½A 32V	455640	153-R				

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp	274020	#1892
M3	Switch		Speaker Interlock
	Speaker Ass'y.	Model AC-2908	Complete, For 5" x 7" rear seat speaker installation
	Printed Board	7271333-C	

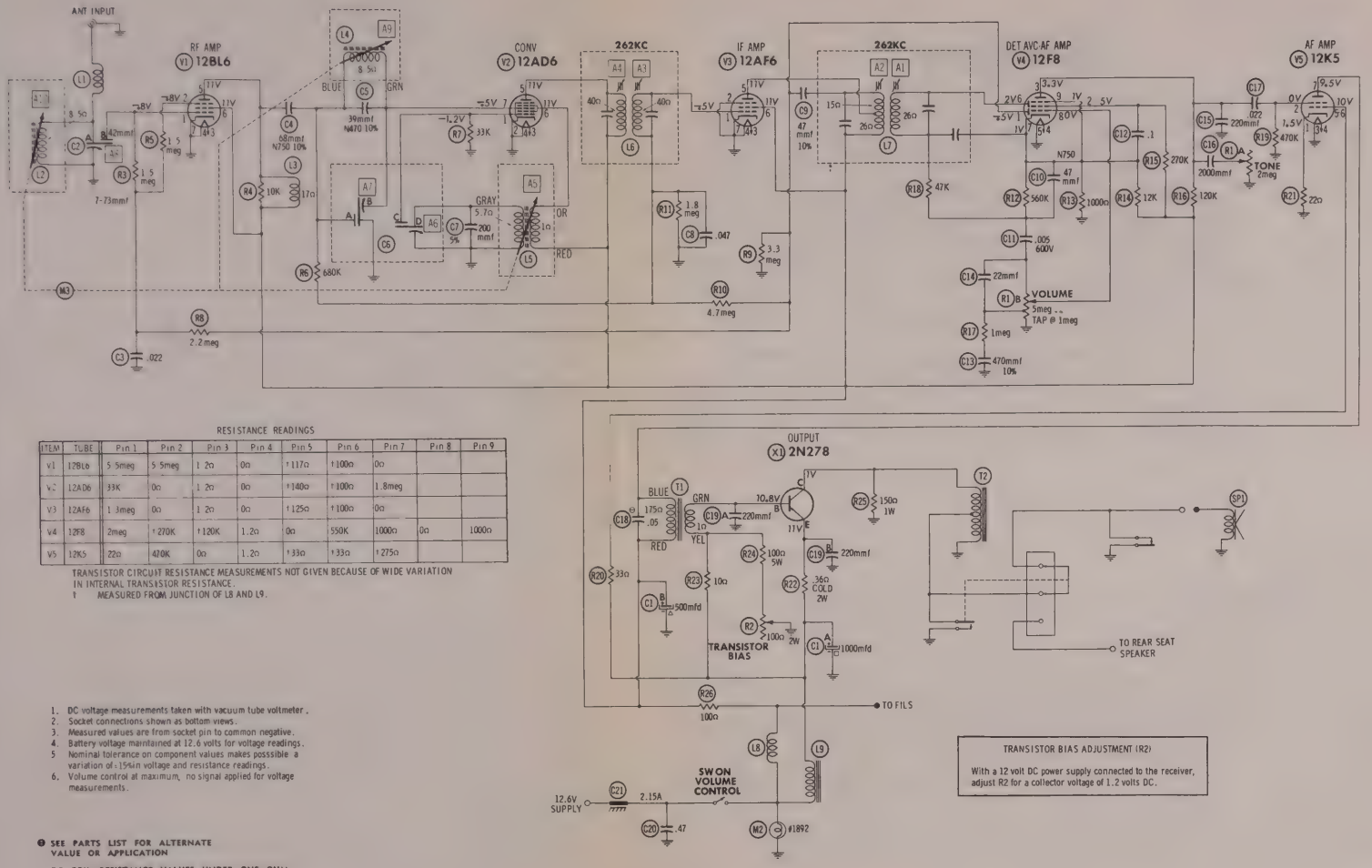
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7271845	Control
Knob	569555	Dummy
Knob	7271847	Tone
Pushbutton	1221190	5 Used, Includes Front Bearing Plate and Slides
Pointer Ass'y.	7272127	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5 5meg	5 5meg	1 2Ω	0Ω	†117Ω	†100Ω	0Ω		
V2	12AD6	33K	0Ω	1 2Ω	0Ω	†140Ω	†100Ω	1.8meg		
V3	12AF6	1 3meg	0Ω	1 2Ω	0Ω	†125Ω	†100Ω	0Ω		
V4	12F8	2meg	†270K	†120K	1.2Ω	0Ω	550K	1000Ω	0Ω	1000Ω
V5	12K5	22Ω	470K	0Ω	1.2Ω	†33Ω	†33Ω	†275Ω		

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF L8 AND L9.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

TRANSISTOR BIAS ADJUSTMENT (R2)

With a 12 volt DC power supply connected to the receiver, adjust R2 for a collector voltage of 1.2 volts DC.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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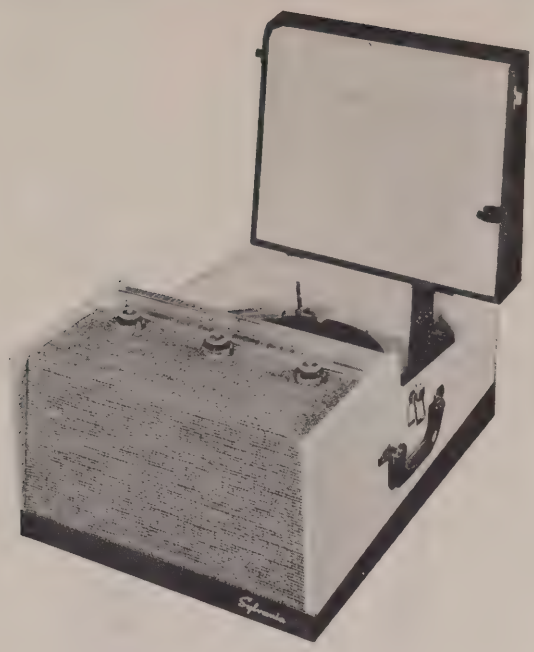
PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYLVANIA MODEL 4501 (Ch. 1-624-1)

SYLVANIA MODEL 4501 (Ch. 1-624-1)



TRADE NAME	Sylvania Model 4501 (Ch. 1-624-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N.Y.
TYPE SET	AC Operated AM Receiver with 4 Speed Automatic Record Changer
TUBES (Six)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12CR6 Det. -AVC-AF Amp., 12BF6 Phase Inverter, (2) 35C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	.35 Amp. @ 117 Volts AC (31 watts)
TUNING RANGE—BROADCAST	535-1630KC

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SYLVANIA 1-318-2—PHOTOFACT SET 401 FOLDER 13.

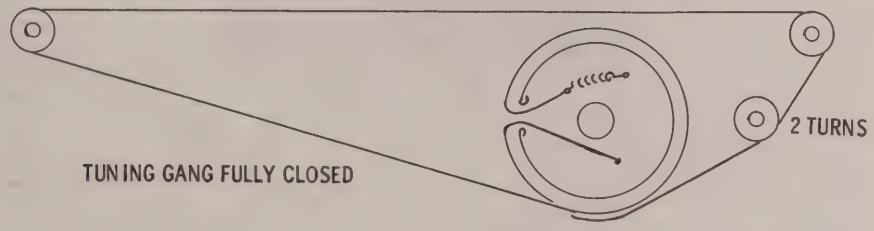
SYLVANIA MODEL 4501 (Ch. 1-624-1)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B—. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1) Low side to B—	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2	"	"	1630KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang. Repeat Steps 2, 3, and 4.



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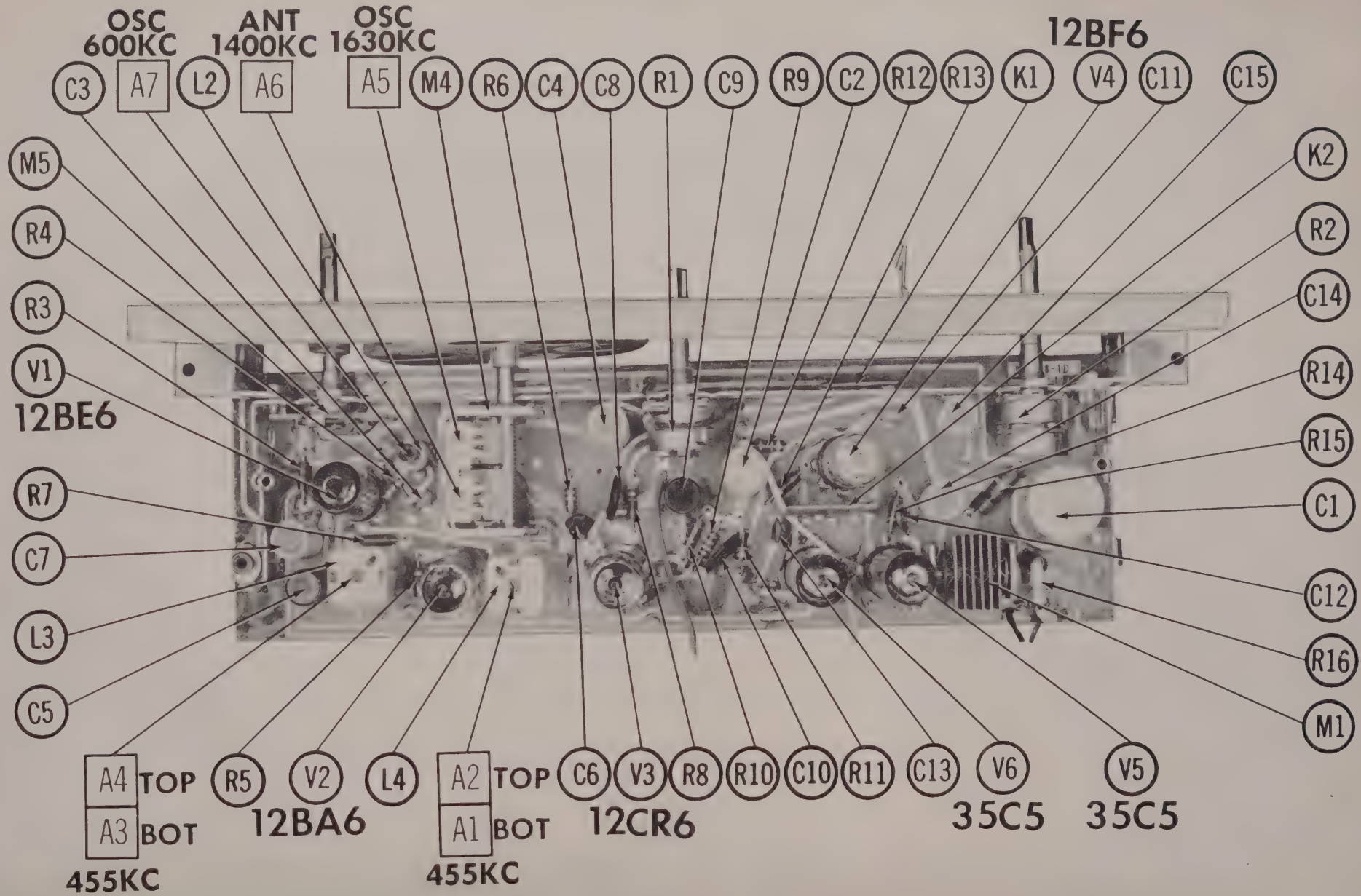


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12CR6	
V4	Phase Inverter	12BF6	
V5	Output	35C5	
V6	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 70	150	161-2022	AFH2-17-50	BBRD8415	PFP214.3	TDLD-10	MTD-303	R2686*
B	▲ 30	150							
C2	4	150	161-1046	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402

*Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	470				MD-471				10%
C4	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	
C5	.047	200		P288N-047	DF-503	BC2S47J	ACE6147	2SE-S47	
C6	150			BPD-00015	DD-151	L10T15	UC-5315	5GA-T15	
C7	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	
C8	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	.047	200		P288N-047	DF-503	BC2S47J	ACE6147	2SE-S47	
C10	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	470				MD-471				10%
C12	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C14	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	
C15	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	152-0044	BT-71	A47F5-1meg	Q19-137X	UT-443	Loudness, Tap@500K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	500K	½	154-0016	F1-41		♦ ■ QJ-974R	† UE3830	Bass
B	3meg	½		R2-78				Treble

■ " Concentrikit" Equivalent: K-6Kit, Base Elements and Shafts B13-133, P17-129 (Panel) B11-140, R1-209 (Rear)
♦ Not available as factory assembled control.
* Use KR on CRL "Red Label" controls and KB on "Blue Label" controls
† "STA-LOC" Equivalent: FD55L, OS2250, RU36L, IS1875

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R3	2.2meg			
R4	22K			
R5	150Ω			
R6	47K			
R7	2.2meg			
R8	10meg			
R9	330K			
R10	1.5meg			
R11	22K			
R12	4.7meg			
R13	1meg			
R14	100Ω			
R15	1000Ω	1		
R16	33Ω	3	189-0084	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYLVANIA PART No.	Meissner PART. No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	581-0013					
L2	Osc. Coil	113-0040.					
L3	Input IF	121-0104	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	122-0032	16-6780	BC-357	13-PC10	RF-4	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5200Ω CT	1-2Ω	Part of SP2 (B80-47-1A)	Z1005						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	539-0607 (33-342-4A)	6A15	Parallel and Phase
SP2	6"	PM	3-4Ω	539-0608① (33-343-4A)	6A15	① Includes T1.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1	Tone Compensation	120mmf, 10000mmf 39K	190-0040	
K2	Audio Coup. Net.	10000mmf, 10000mmf, 47K, 47K, 470K, 470K	190-0041	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SYLVANIA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.088A	517-0018	1235AH	RS100A	100AT	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SYLVANIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2		55-T or 81-TB	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SYLVANIA PART No.	JENSEN PART No.	WALCO PART No.	
M3		† S-66 or † ♦ S-66SD or ♦ S-66D	† W-75TPS or † ♦ W-75DS or ♦ W-75TPD	† Jewel ♦Diamond

MISCELLANEOUS

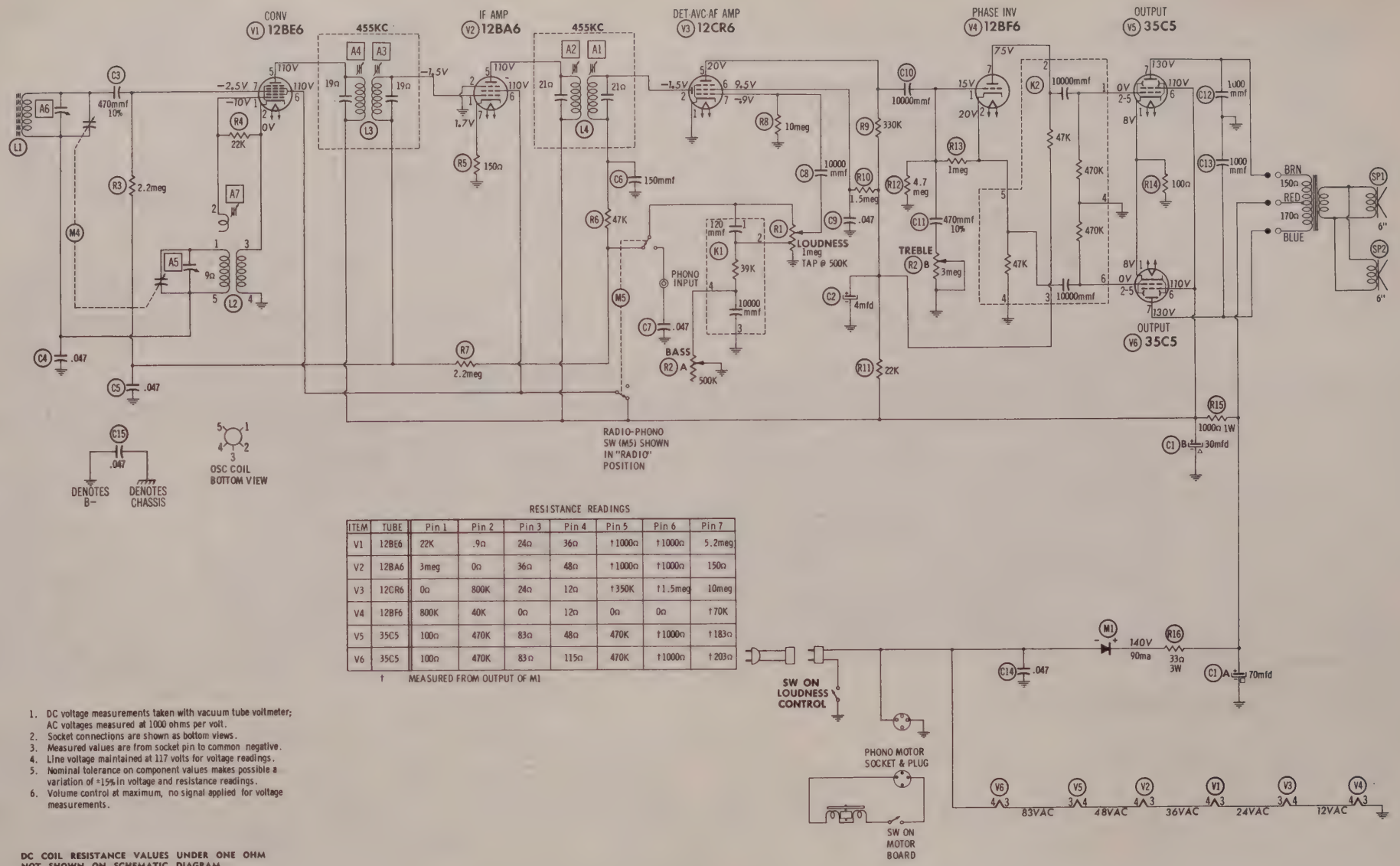
ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M4	Tuning Cap.	170-0027	2 Gang
M5	Switch	571-0023	Radio-Phono (Ratary Wafer Type)
	Printed Board	D-25-8-1D	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	24Ω	36Ω	†1000Ω	†1000Ω	5.2meg
V2	12BA6	3meg	0Ω	36Ω	48Ω	†1000Ω	†1000Ω	150Ω
V3	12CR6	0Ω	800K	24Ω	12Ω	†350K	†1.5meg	10meg
V4	12BF6	800K	40K	0Ω	12Ω	0Ω	0Ω	†70K
V5	35C5	100Ω	470K	83Ω	48Ω	470K	†1000Ω	†183Ω
V6	35C5	100Ω	470K	83Ω	115Ω	470K	†1000Ω	†203Ω

† MEASURED FROM OUTPUT OF M1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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WESTINGHOUSE MODELS H-651P6, H-652P6, H-653P6 (Ch. V-2278-4)

WESTINGHOUSE MODELS H-651P6, H-652P6, H-653P6 (Ch. V-2278-4)

MODEL H-652P6

WESTINGHOUSE MODELS H-651P6, H-652P6, H-653P6 (Ch. V-2278-4)

TRADE NAME	Westinghouse Models H-651P6, H-652P6, H-653P6 (Ch. V-2278-4)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N. J.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY 9 Volts DC	RATING 7.5 MA@9 Volts DC (No Signal, MINIMUM Volume)
TUNING RANGE—BROADCAST 540-1600KC	8.5 MA@9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1625KC	"	"	A4	" " "
3		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang thru 600KC signal. Repeat Steps 2 & 3.
4.		"	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove screw from center of tuning knob. Hold knob to prevent straining tuning capacitor. Remove knob.
2. Loosen screw on back cover. Remove back.
3. Remove self tapping screw from tuning capacitor end of printed board.
4. Slide printed board toward tuning capacitor end of case to free upper end of speaker bracket from plastic lip.
5. Raise board over lip and remove from case.

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SET 411 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N252	Converter			2N486		PNP
X2	2N253	1st IF Amplifier	2N438				NPN
X3	2N254	2nd IF Amplifier	2N439				NPN
X4	2N403 *	Driver			2N362		PNP
X5	2N185	Output			2N362		PNP
X6	2N185	Output			2N362		PNP

* Alternate type #2N185.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	12	218V012H01	XPP-12040	NL50-10	TT15X40	ML40-15	MQ-0130	R2329*
C2	10	3	218V012H11	XPP-3010	NL10-3	TT3X10	ML10-6		TE-1053
C3	5	12	218V012H09	XPP-12005	NL5-15	TT12X5	ML5-15		TE-1127
C4	40	12	218V012H01	XPP-12040	NL50-10	TT15X40	ML40-15	MQ-0130	R2329 *

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	4700		215V300H04	BPD-0047	DD-472	BYA10D47	UC-5247	TG-D50	
C6	1000		215V300H15	BPD-001	DD-102	BYA6D1	DC521	5GA-D1	
C7	10000		215V300H12	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C8	10000		215V300H12	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C9	2200		215V102A22	BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C10	50000		215V303H03	BPD-05				TG-S50	
C11	20000		215V303H04	BPD-02	DD-203	BYB6S2		5HK-S2	
C12	1000		215V300H15	BPD-001	DD-102	BYA6D1	DC521	5GA-D1	
C13	50000		215V303H03	BPD-05				TG-S50	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	270V024H01		44S-5K-W			Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

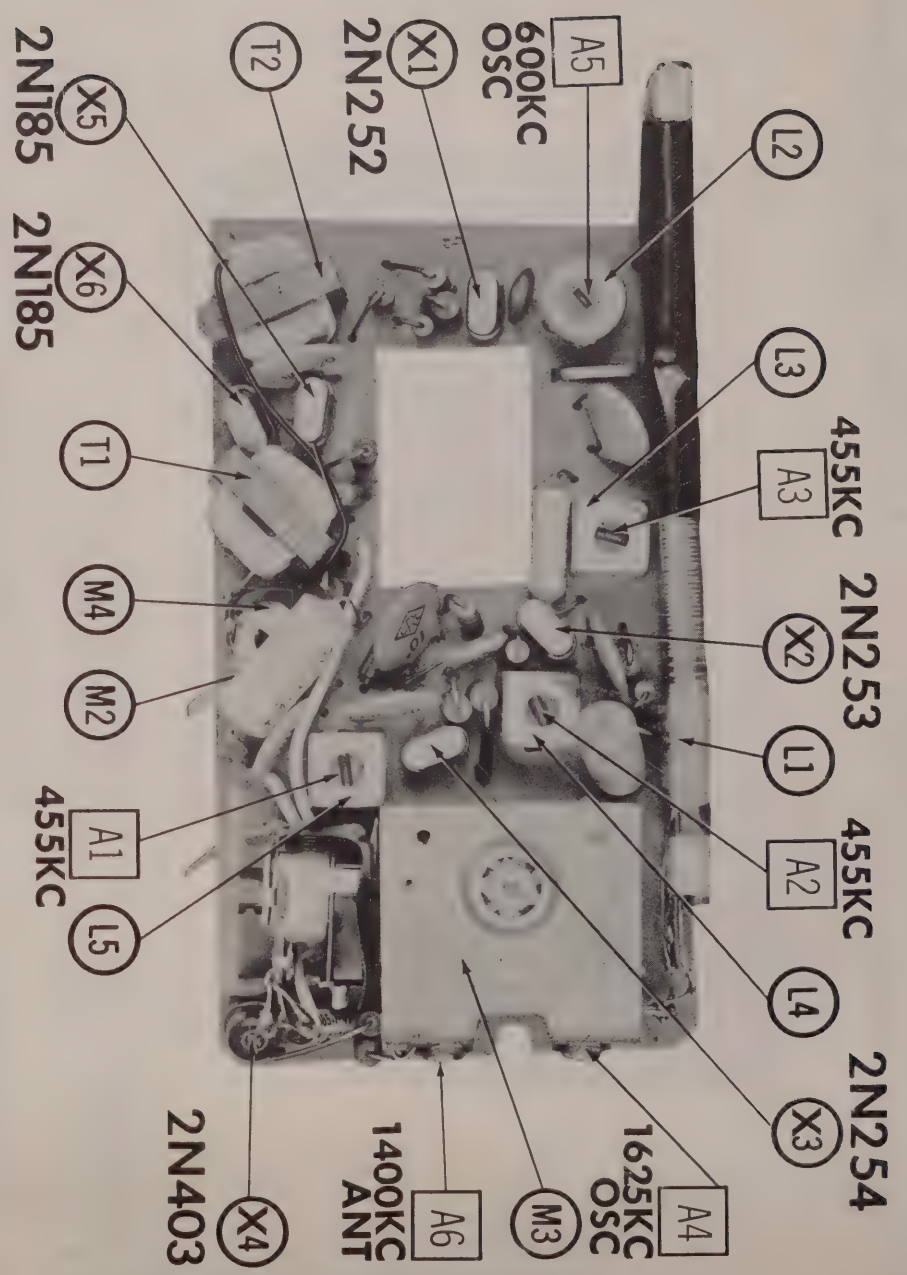
ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R2	39K		250V223A93	
R3	8200Ω		250V228A22	
R4	4700Ω		250V224A72	
R5	100Ω		250V221A01	
R6	1000Ω		250V231A02	
R7	15K		250V221A53	
R8	1000Ω		250V221A02	
R9	470Ω		250V224A71	
R10	1500Ω		250V221A52	

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R11	56K		250V225A63	
R12	3300Ω		250V223A32	
R13	22K		250V222A23	
R14	1000Ω		250V221A02	
R15	6800Ω		250V226A82	
R16	100Ω		250V221A01	
R17	10Ω		250V221A00	
R18	220Ω		250V232A21	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Westinghouse PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	310V012H02					
L2	Osc. Coil	230V026H01					
L3	1st IF	235V014H01					
L4	2nd IF	235V014H01					
L5	3rd IF	235V014H02					

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	:1	430V024H01						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1450Ω CT	12Ω	430V025H01							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	2 3/4"	PM	12Ω	570V004M01		

BATTERIES

ITEM No.	VOLTAGE	Westinghouse PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6		226		M-1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Westinghouse PART No.	CBS PART No.	SYLVANIA PART No.	
M2	IN295	296V002H01	IN60	IN295	Detector (Pigtail) Alternate Type IN87G

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M3	Tuning Cap.	330V005H02	Two gang (Ant. 12-135mmf, Osc. 12-93mmf)
M4	Jack	754V008H01	Earphone
	Printed Board	V-2278-4	

CABINETS & CABINET PARTS

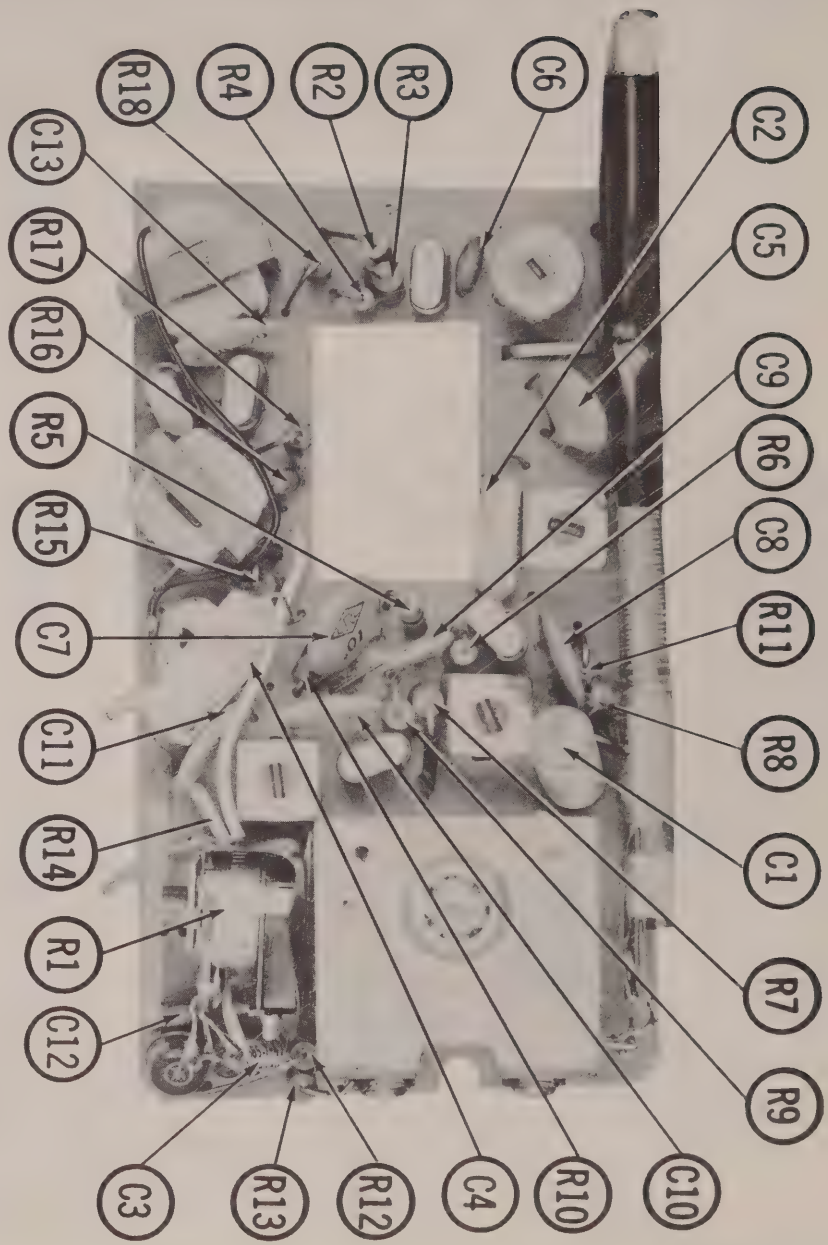
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V079H01	Tuning
Knob	550V017H01	On-Off, Volume
Cabinet	513V025H02	Less Ring, Insignia, Stiffener, and Escutcheon, Model H-652P6
Cabinet	513V025H01	Less Ring, Insignia, Stiffener, and Escutcheon, Model H-651P6
Cabinet	513V025H03	Less Ring, Insignia, Stiffener, and Escutcheon, Model H-653P6

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

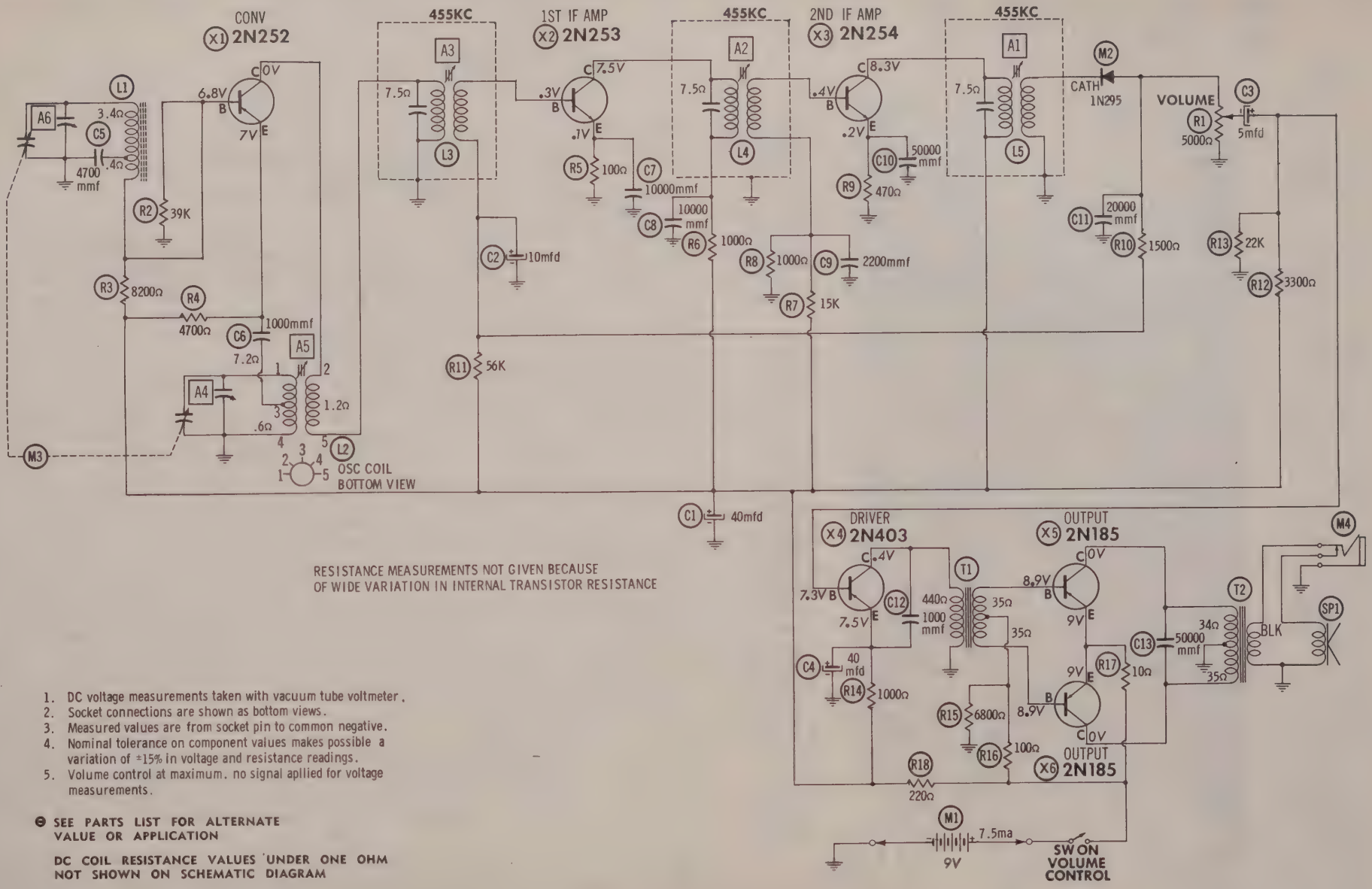


SET 411 FOLDER 18

FOLDER 18

WESTINGHOUSE
MODEL H-651P6 (Ch. V-2278-4)

WESTINGHOUSE
MODEL H-651P6 (Ch. V-2278-4)



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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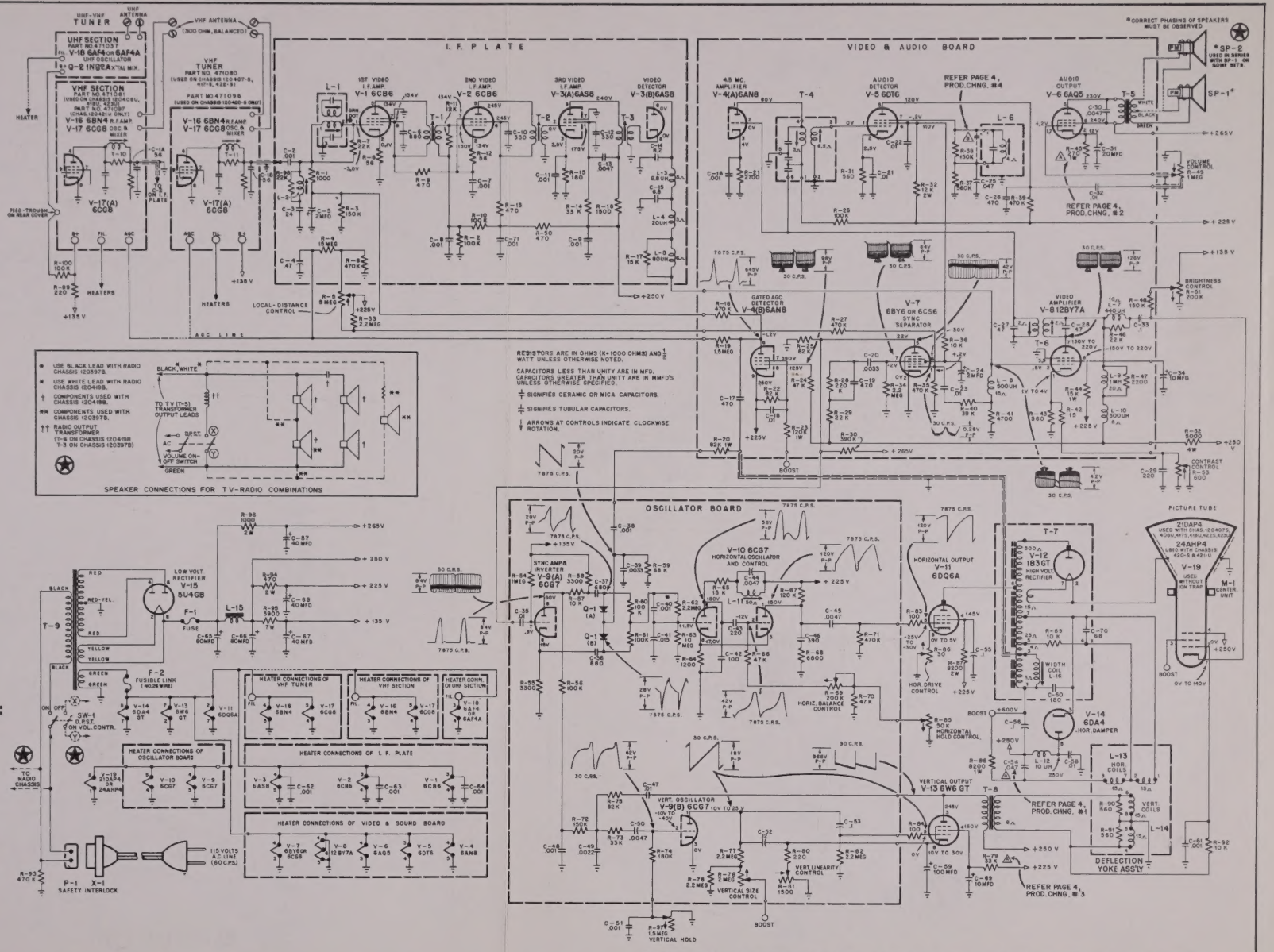
EMERSON MODELS:

1414
1415
1432
1433
1434
1435
1438
1439
1440
1441

CHASSIS:

120407S
120408U
120417S
120418U
120420S
120421U
120422S
120423U

See inside page for Radio Chassis:
120397-B
120419-B


I. F. PLATE
VIDEO & AUDIO BOARD
OSCILLATOR BOARD
SPEAKER CONNECTIONS FOR TV-RADIO COMBINATIONS
HEATER CONNECTIONS OF VHF TUNER
HEATER CONNECTIONS OF VHF SECTION
HEATER CONNECTIONS OF UHF SECTION
HEATER CONNECTIONS OF OSCILLATOR BOARD
HEATER CONNECTIONS OF I. F. PLATE
HEATER CONNECTIONS OF VIDEO & SOUND BOARD
RESISTORS ARE IN OHMS (K=1000 OHMS) AND ½ WATT UNLESS OTHERWISE NOTED.
CAPACITORS LESS THAN UNITY ARE IN MFD. CAPACITORS GREATER THAN UNITY ARE IN MMFD'S UNLESS OTHERWISE SPECIFIED.
SIGNIFIES CERAMIC OR MICA CAPACITORS.
SIGNIFIES TUBULAR CAPACITORS.
ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION.
*CORRECT PHASING OF SPEAKERS MUST BE OBSERVED
REFER PAGE 4, PROD. CHNG. #4
REFER PAGE 4, PROD. CHNG. #2
REFER PAGE 4, PROD. CHNG. #1
REFER PAGE 4, PROD. CHNG. #3
PICTURE TUBE
DEFLECTION YOKE ASSY
VERTICAL HOLD
VERTICAL SIZE CONTROL
HORIZ. BALANCE CONTROL
HOR. DRIVE CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
VOLUME CONTROL
SAFETY INTERLOCK
115 VOLTS A.C. LINE (60 C.P.S.)

Schematic Diagram Courtesy of Emerson Radio & Phonograph Corp.

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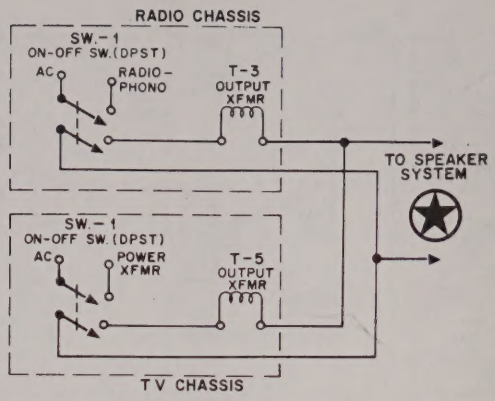
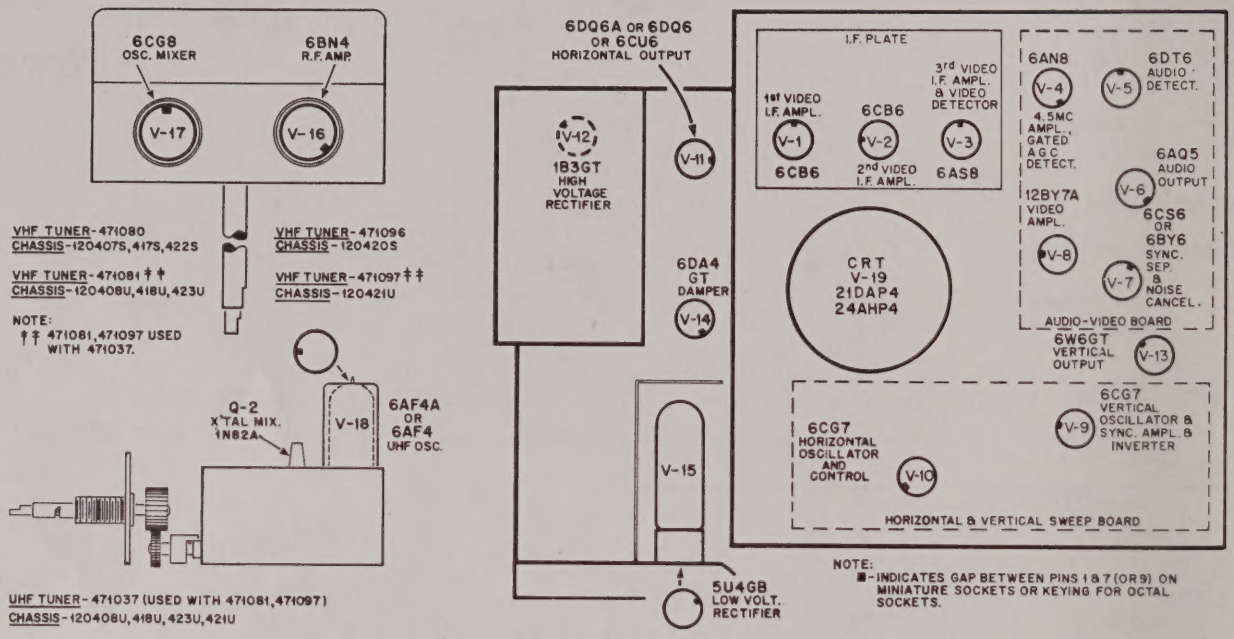
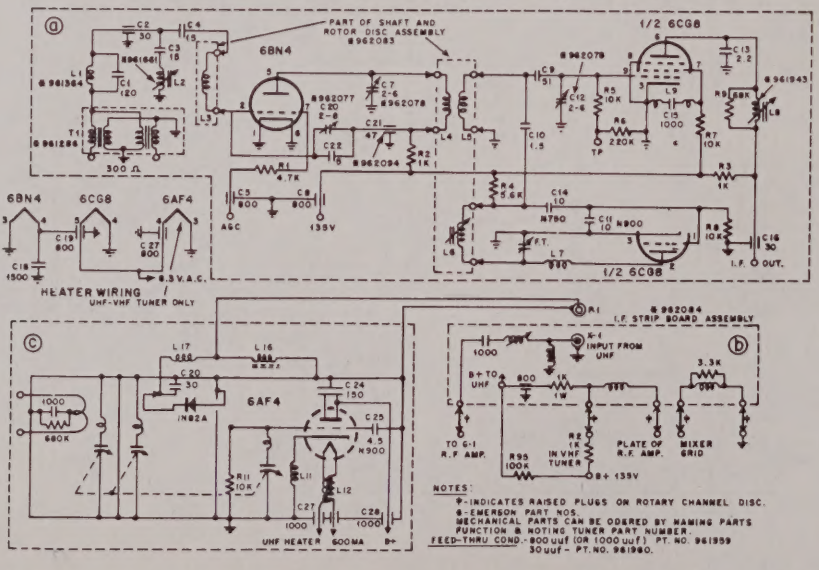
SPEAKER SWITCHING SYSTEM

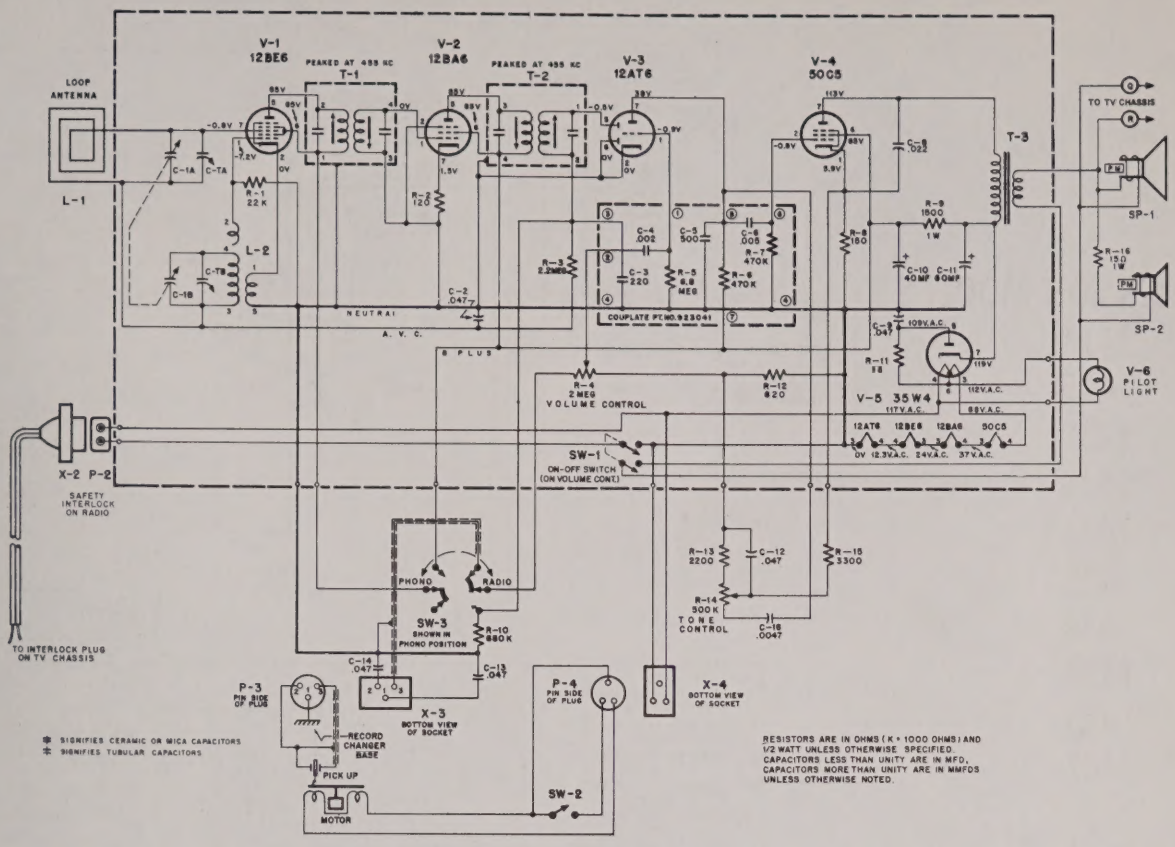




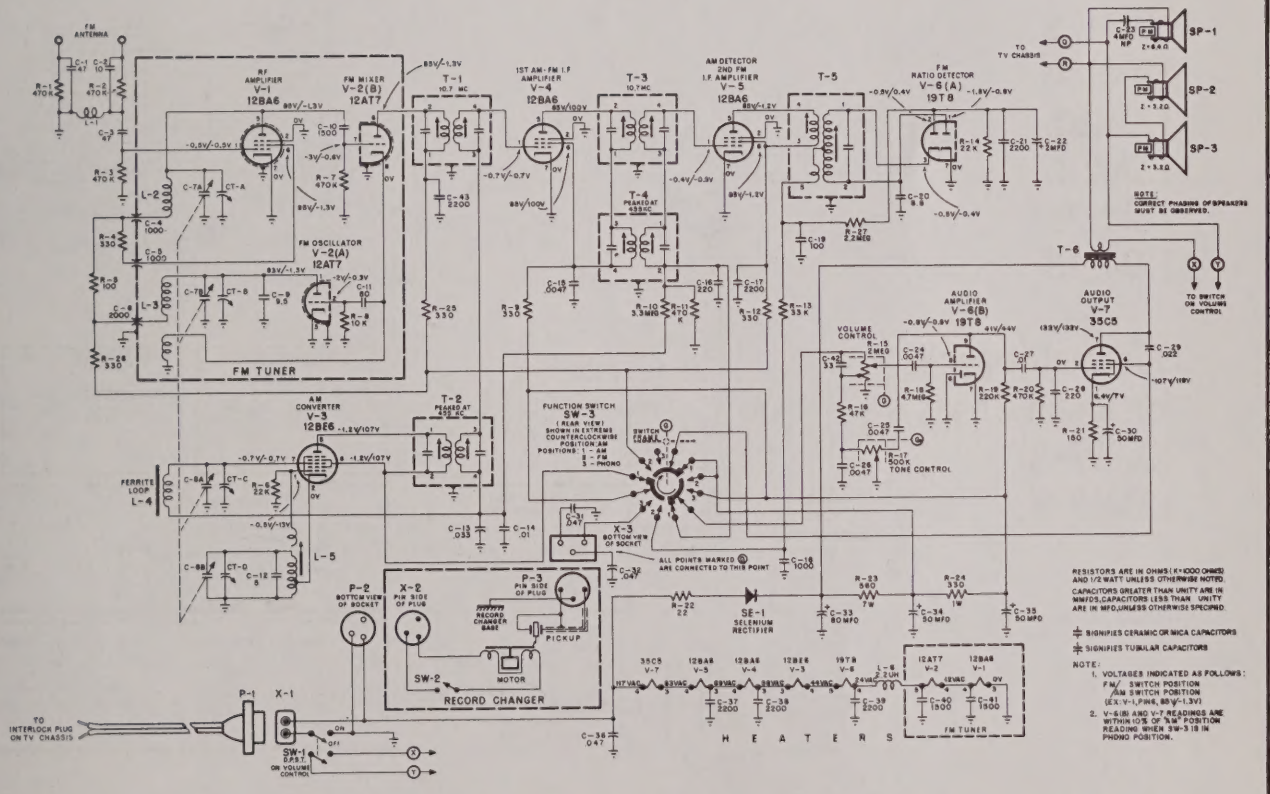
TUNER CH. 471080, 1081, 1096, 1097, 1037



Schematic Diagram Courtesy of Emerson Radio & Phonograph Corp.



RADIO CH. 120397-B


FM ANTENNA
RF AMPLIFIER V-1 12BA6
FM MIXER V-2(B) 12AT7
FM OSCILLATOR V-2(A) 12AT7
FM TUNER
1ST AM-FM I.F AMPLIFIER V-4 12BA6
AM DETECTOR 2ND FM I.F AMPLIFIER V-5 12BA6
FM RATIO DETECTOR V-8(A) 19T8
AUDIO AMPLIFIER V-8(B) 19T8
AUDIO OUTPUT V-7 35C5
AM CONVERTER V-3 12BE6
T-1 10.7 MC
T-2 PEAKED AT 455 KC
T-3 10.7 MC
T-4 PEAKED AT 455 KC
T-5
T-6
SP-1
SP-2
SP-3
FERRITE LOOP L-4
L-5
FUNCTION SWITCH SW-3
SW-1 D.P.S.T. OR VOLUME CONTROL
SW-2
RECORD CHANGER
PICKUP
MOTOR
SE-1 SELENIUM RECTIFIER
HEATERS
TO INTERLOCK PLUG ON TV CHASSIS
TO SWITCH ON VOLUME CONTROL
NOTE: CORRECT PHASING OF SPEAKERS MUST BE OBSERVED.
RESISTORS ARE IN OHMS (K = 1000 OHMS) AND 1/2 WATT UNLESS OTHERWISE NOTED.
CAPACITORS GREATER THAN UNITY ARE IN MMFDS, CAPACITORS LESS THAN UNITY ARE IN MFD, UNLESS OTHERWISE SPECIFIED.
* SIGNIFIES CERAMIC OR MICA CAPACITORS
* SIGNIFIES TUBULAR CAPACITORS
NOTE:
1. VOLTAGES INDICATED AS FOLLOWS: FM/ SWITCH POSITION / AM SWITCH POSITION (EX: V-1, PIN 6, 85V/-1.3V)
2. V-6 (B) AND V-7 READINGS ARE WITHIN 10% OF "AM" POSITION READING WHEN SW-3 IS IN PHONO POSITION.

RADIO CH. 120419-B

Schematic Diagram Courtesy of Emerson Radio & Phonograph Corp.